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MARGINAL NOTES

To the Hosts—

"We shall carry away with us a permanent feeling of pleasure for the hospitable, warm, and generous reception which each of you has given us personally," said Dr H. S. Osborne, USA, in a toast to the USSR hosts of the International Electrotechnical Commission at Moscow. The toast was offered at the official banquet given by the Committee for USSR Participation in International Power Conferences. Dr Osborne is a past president of IEC and also of the United States National Committee.

"For us from other nations, this is a rewarding experience in friendship between a group of people from many nations working toward a common end," Dr Osborne said. "We hope and trust that this friendship will increase continually in the years ahead and can be counted as one more influence helping to sustain peace among the nations of the world."

Delegates from the USA who attended the IEC meetings in Moscow July 2-12 were: R. C. Sogge, Manager, Engineering Standards, General Electric Company, president, U. S. National Committee of the IEC; H. Blackmon, Westinghouse Electric Corporation, USNC vice-president; E. F. W. Beck, Westinghouse Electric Corporation (National Electrical Manufacturers Association); L. W. Cole, Federal Pacific Electric Company; E. V. DeBlieux, General Electric Co.; C. L. Dawes, Harvard University; J. H. Foote, Commonwealth Associations, Inc; G. W. Heumann, General Electric Co. (NEMA); E. A. Harty, General Electric Co. (NEMA); L. F. Hunt, Southern California Edison Co.; S. David Hoffman, American Standards Association, USNC secretary; Vice Admiral G. F. Hussey, Jr, USN (ret), American Standards Association, USNC Treasurer; J. G. Hutton, General Electric Co.; W. M. Leeds, Westinghouse Corp (NEMA); G. F. Lincks, General Electric Co. (NEMA); C. H. Linder, General Electric Co.; W. P. Lowell, Jr, Sylvania Electric Products, Inc; J. W.

May, ITE Circuit Breaker Co. (NEMA); L. W. Morton, General Electric Co.; I. R. Smith, Westinghouse Electric Corp (NEMA); F. Ullman, Westinghouse Electric International Co.; F. R. Wolfe, National Carbon Co.; W. F. Doxey, U.S. Army Signal Engineering Laboratory.

Mr Hoffman, USNC secretary, reported that he was asked to look into the possibility of exchange of electrical power engineers between the USA and USSR. The request was made by Nikolai P. Galochkin, chief of the department of foreign relations and A. Nekrosov, chief of the technical department. Both of these departments are in the Ministry of Power Stations.

The ABC Meetings—

Plans for the ABC meetings on unification of American-British-Canadian drawing practices are near completion, announcements indicate. The meetings are being held in Toronto, Canada, October 7-11.

A report on the proposed American Standard Drafting Standards Manual, by R. P. Hoelscher, chairman of the Y14 Sectional Committee, is being published in the October issue of THE MAGAZINE OF STANDARDS. A discussion of the views presented at the ABC meetings and the meeting results will follow in the November issue.

The Front Cover—

In this 32-story central building of the Moscow Lomonosov State University at Lenin Hills, the International Electrotechnical Commission had its headquarters and held all its meetings July 2-12. Founded in 1755, this is the oldest Russian University. The new central building and its 18-story wings were completed in 1953. More than 2,000 professors, teachers, and scientists work on the University's 12 faculties and in its 210 departments devoted to the sciences and agriculture. It reports an enrollment of some 22,000 students.

This Month's Standards Personality

HERBERT G. ARLT fitted naturally into standards activities as a part of his work on materials engineering for the Bell Telephone Laboratories since standards are everybody's business in the Bell Telephone System. He never lost sight of the fact that standardization meant, among other things, greater efficiency of operation, greater breadth of application and greater savings of manpower and money.

Most of Mr Arlt's standardization activities have been within the Bell System although he has been active in ASA and ASTM circles for a number of years. His activities in the ASTM were largely with the committees on paint and metals concerned with corrosion protection. He devised the conical mandrel tester which was standardized by the ASTM and is presently widely used for the determination of elongation of organic coatings on metals. His ASA activities have covered a number of projects and, at present, he is a member of Committee Z17 on Preferred Numbers and is also an alternate member of the Miscellaneous Standards Board, representing the Telephone Group.

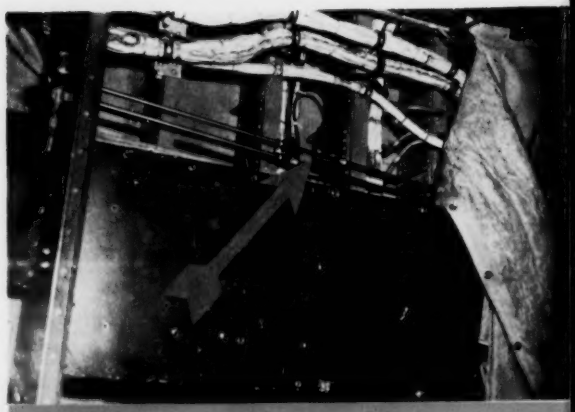
During the early thirties Mr Arlt was instrumental in the company standardization of machine screw sizes and classes of fit. As a part of this activity, he was involved in the modernization of the metrology laboratory of the Bell Telephone Laboratories. During World War II, Mr Arlt, among other things, was in charge of the development and production of the Fastax ultra high speed motion picture camera. This camera is in wide commercial use today for analyzing high speed mechanical movements by means of motion pictures taken at 10,000 frames per second. During this same period, Mr Arlt was Technical Advisor on corrosion protection to the Army Ordnance Department.

At present Mr Arlt is engaged in standardization of raw materials for use in the manufacture of long lived telephone apparatus and equipment. He is also concerned with improvement in standard methods and procedures concerned with the generation and handling of Bell System Technical Information. Mr Arlt has recently been developing the use of nontechnical Bachelors of Arts with English majors for the editing of technical papers, bulletins, specifications, and manuals. He has already demonstrated how these people could be utilized effectively to combat the shortage in engineering personnel by assigning nontechnical people to the nontechnical aspects of engineering work.

Mr Arlt has given generously of his time and abilities to the Standards Engineers Society—the infant professional association of which he is, at present, the President. Mr Arlt is a member of the American Society for Testing Materials, the American Chemical Society, and the American Numismatic Association. He holds the degree of ME from Stevens Institute of Technology, is a member of Tau Beta Pi, and is a registered Professional Engineer in the states of New York and New Jersey. He has authored several articles on the testing of finishes and holds one of early patents for printed circuits.

On the lighter side, Mr Arlt is a deep sea fishing enthusiast and an amateur numismatist.

Mr Levy, manager of stress analysis engineering for the Missile and Ordnance Systems Department, General Electric Company, Philadelphia, is chairman of the subcommittee that prepared the new American Standard on Pickups for Shock and Vibration, Z24.21-1957. The subcommittee works under the auspices of ASA Sectional Committee Z24 on Acoustics, Vibration, and Mechanical Shock, sponsored by the Acoustical Society of America.



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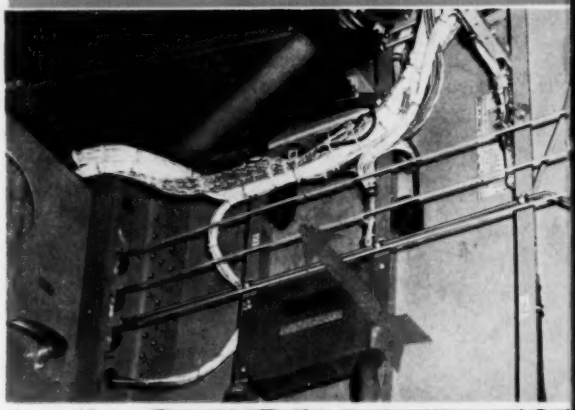

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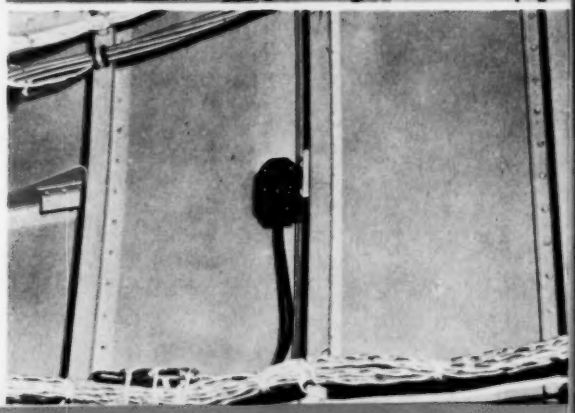

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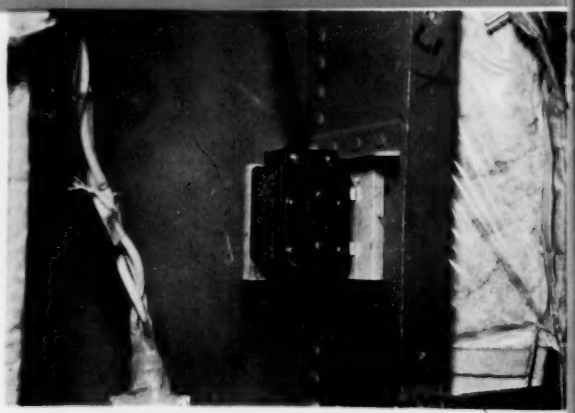

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Figure 1. *Use of pickups to measure vibration levels at various locations in the fuselage of the B-52 airplane.*
1. Nose section above forward entrance
2. Forward end of bomb bay
3. Aft of rear wheel well
4. Tail gunner location

Figure 2. *Measurement of vibration and shock response of a jet engine dolly during road tests.*

How Effective Is Your "Pickup"?

by **S. Levy**

"Pickups" are used in measuring the shock and vibration that may cause serious damage to delicate equipment. Now, American Standard Z24.21-1957 tells how to check electric and direct-writing pickups and what to expect of the different classes of pickups. Other standards in the series on pickups will follow.

MUCH new material has been made available in the recent publication of the American Standard Method for Specifying the Characteristics of Pickups* for Shock and Vibration Measurement, Z24.21-1957. New definitions, identification of specifiable features of both electric and direct-writing pickups, and a description of the operating principles of the different classes of pickups are presented.

This standard is intended principally as a guide for selecting pickups needed in the measurement of vibration and shock. Such pickups have found widespread use in recent years because of the increasing importance of dynamic effects in equipment having large power-to-weight ratios, such as missiles, aircraft, ships, and other vehicles. Their use has increased also due to the urgent need for measurements leading to a better understanding of explosive effects in military and atomic energy applications. Pickups have also been used as a source of control information, such as in the servo-loop of guided missiles.

It is only with the advent of electric pickups, and the associated means of amplifying and recording output, that the measurement of dynamic effects has attained substantial reliability. As recently as ten to fifteen years ago it was extremely difficult to obtain identical readings from different types of pickups used for the same measurement. In some cases, it was even difficult to duplicate readings on similar pickups.

Another source of difficulty in the past has resulted from the weight and size of pickups. A pickup having appreciable weight may so modify the dynamic behavior of a part being surveyed as to invalidate the results. Likewise, physical size brings confusion since it makes one uncertain about the point on the structure for which the measurement is applicable. Fortunately, weight and size have been reduced sufficiently in recent years to limit this source of doubt.

Finally, the fidelity with which a pickup can measure shock and vibration phenomena depends on its natural frequency. The natural frequency of pickups has increased radically in recent years until now pickups are available with frequencies well over 10,000 cycles per second, thus making all but the fastest dynamic effects measurable.

The advance in the art of pickup manufacture has been closely allied with an advance in auxiliary equipment such as amplifiers and recorders. This equipment is the subject of a parallel standard, Z24.20, entitled,

* A pickup is defined in the standard as "a device for converting the mechanical motion to be measured into an electrical, optical, hydraulic, mechanical, or other signal or record."

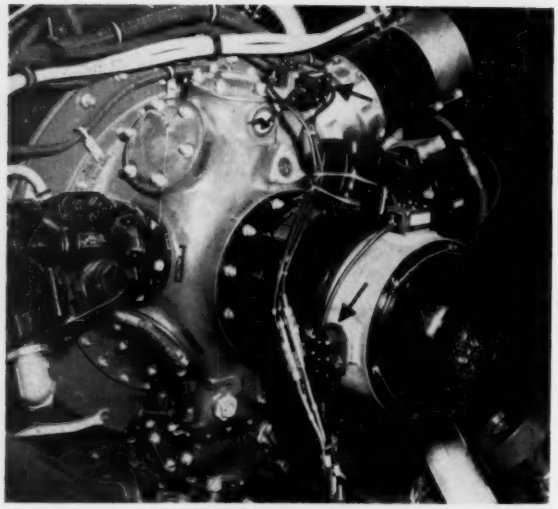


Figure 3. (*Above*) *Vibration pickup installation on the J-48 engine.*

motion, even at high "g" levels,[1] it is only with the advent of reciprocity techniques that high precision has been attained at such frequencies. For the lowest frequencies, static calibration on a centrifuge, as well as rotation in the earth's gravitational field, provide good accuracy.

Pickups for which the present standard, Z24.21-1957, is applicable, are shown in the illustrations. Figure 1 shows their use in a bomber airplane. For such an application an electrical signal for remote reading is imperative. Figure 2 shows pickups being used to determine vibratory behavior of ground handling equipment for an aircraft engine. Again, remote reading is required. Figures 3 and 4 show additional aircraft applications of pickups. Figures 5 and 7 show applications of pickups to the determination of vibration amplitude in tests of components. Here it is important that the pickups be accurate and light in weight. Fig-

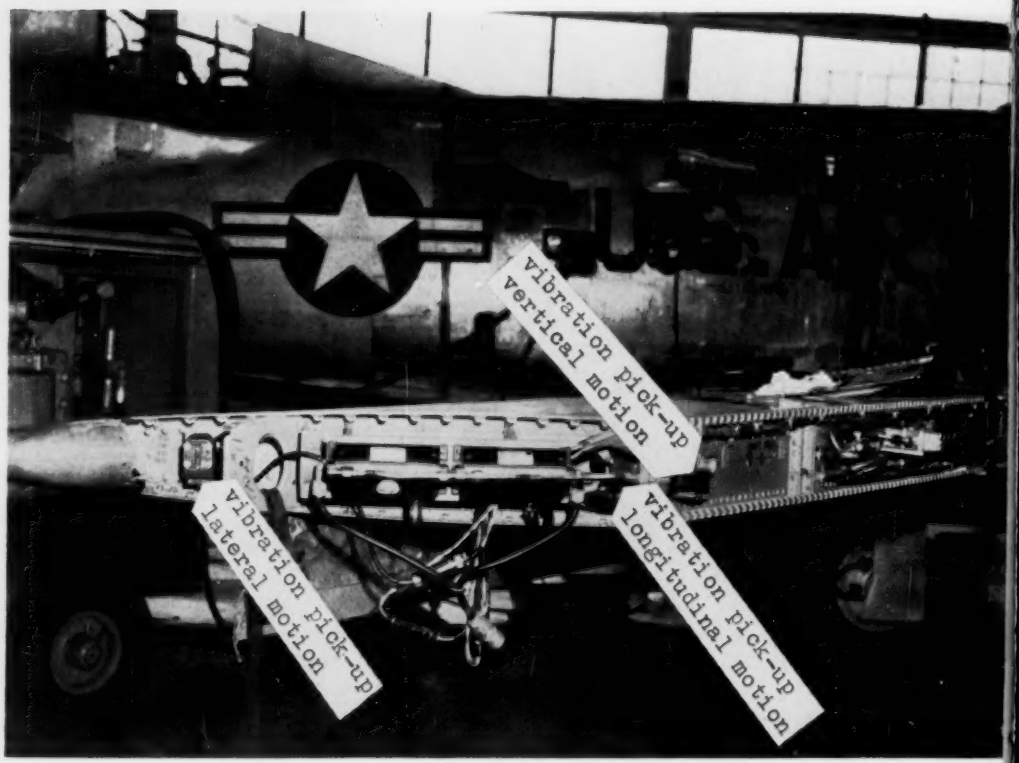


Figure 4. (*Right*) *Installation of pick-ups to measure vibration at the wing tip of an F-86D airplane.*

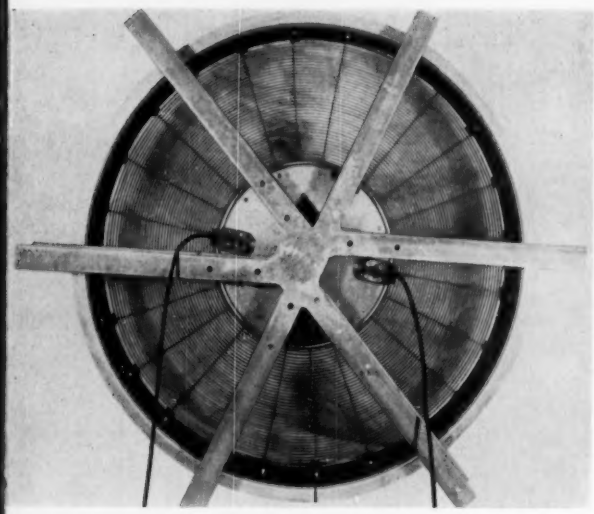
Figure 5. (*Above—right*) *Amplitude of vibration during a fatigue test of an air inlet screen being measured by two MB type 124 vibration pickups.*

"Method for Specifying the Characteristics of Auxiliary Equipment for Shock and Vibration Measurement." This parallel standard is nearing completion and should be issued soon.

Another parallel standard will be Z24.16 entitled, "Manual and Specification for the Calibration of Shock and Vibration Pickups." The advance in the field of pickups has required this parallel advance in calibration techniques. Because of the extremely small displacement amplitudes associated with high frequency

ure 6 shows the use of a pickup to determine the vibration level developed by a blower motor. In this application small size and weight are important pickup characteristics. Figures 8 and 9 show examples of piezoelectric accelerometer pickups. The high inherent natural frequency of such pickups as well as the fact that they are self generating are important character-

[1] "g" is defined in the standard as "the unit of acceleration equal to the acceleration of gravity." Its value is taken as 386 inches per second squared for most vibration work. Acceleration magnitude is frequently expressed as a multiple of "g".



istics. Figure 10 shows the use of a vacuum-tube accelerometer for a drop test. This pickup is desirable because of its high power output.

American Standard Z24.21-1957 gives methods of specifying the important characteristics of vibration pickups of the general classes shown in the illustrations as well as others. It should be a guide to instrument manufacturers in indicating the characteristics of their vibration pickups, and to users in selecting a particular type of pickup or in preparing performance specifications for them.

The user of pickups must realize that the accuracy of the information they provide depends on environmental effects such as temperature, on design characteristics such as natural frequency, and on inherent factors such as weight. The pickup must be selected according to the application in order to furnish good results. As a guide to users, there is in the appendix

The Subcommittee on Pickups for Shock and Vibration consisted of the following personnel:

R. O. Fehr, General Electric Company, Schenectady, N. Y., Supervisor. S. Levy, General Electric Company, Philadelphia, Pa., Chairman; C. E. Crede, The Barry Corporation, Watertown, Mass.; A. I. Dranetz, Gulton Mfg Corporation, Metuchen, N. J.; C. S. Duckwald, General Electric Company, Schenectady, N. Y.; P. M. Honnell, Washington University, St Louis, Mo; D. C. Kennard, Jr, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio; D. B. Kret, Radio Corporation of America, Camden, N. J.; J. N. MacDuff, Rensselaer Polytechnic Institute, Troy, N. Y.; H. L. Rich, David Taylor Model Basin, Washington, D. C.; H. M. Trent and I. Vigness, Naval Research Laboratory, Washington, D. C.; and K. Unholtz, MB Manufacturing Company, New Haven, Conn. Numerous comments and suggestions from users and manufacturers of pickups have been incorporated in this standard.

Copies of American Standard Z24.21-1957 are available at $1.00 each.

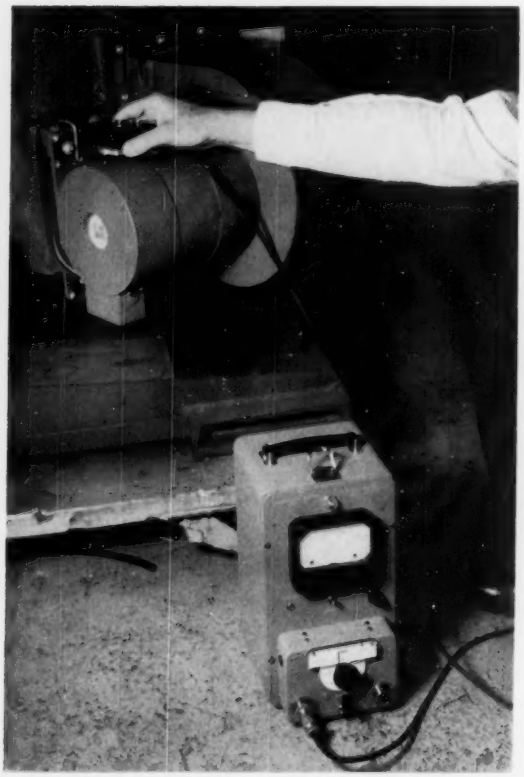
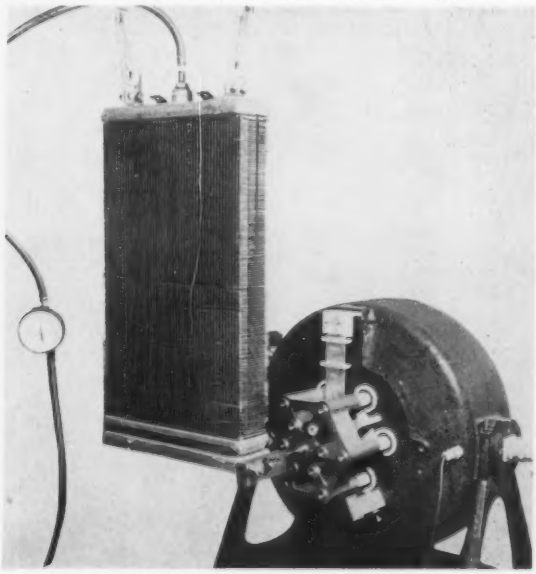


Figure 6. *Measurement of vibration amplitude of a blower motor.*

Figure 7. *Vibrator test of a pressurized radiator core.*



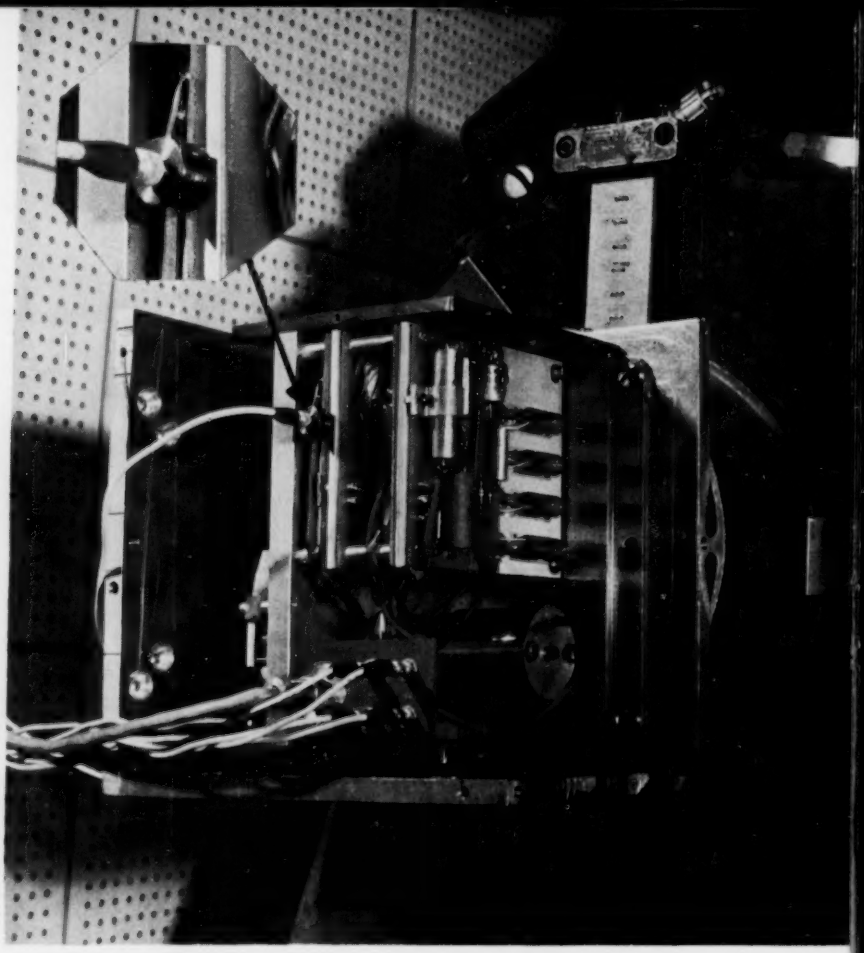
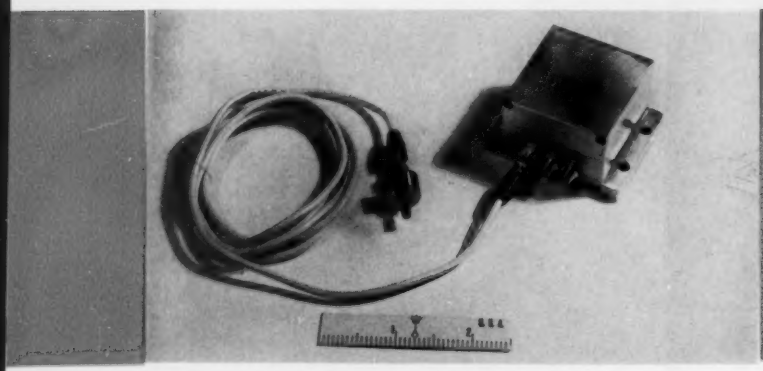
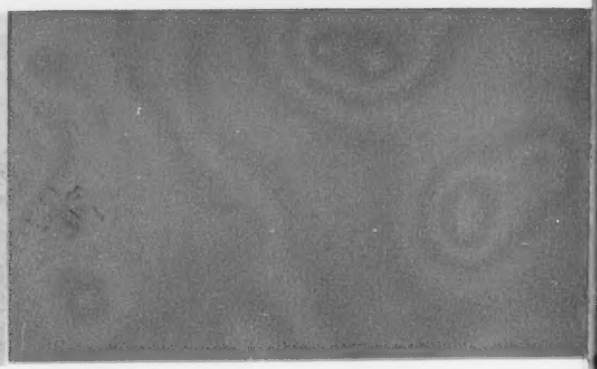


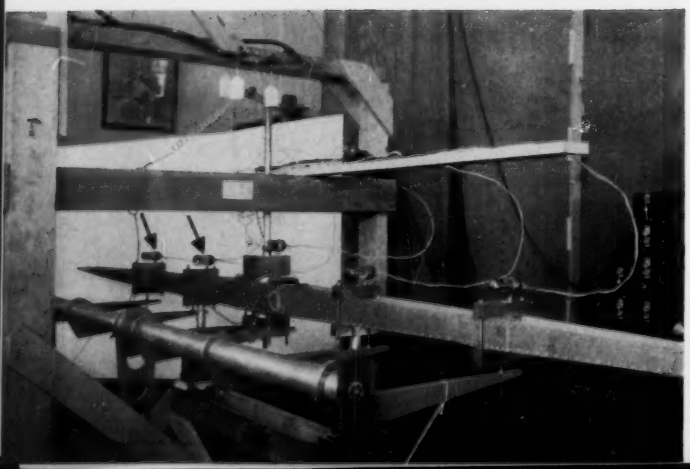
Figure 8. (*Right*) *Use of piezoelectric accelerometers in vibration test of printed circuit board of a tape recorder —insert shows enlargement of pickup.*

Figure 9. (*Center*) *Piezoelectric accelerometer, cylindrical shape device, along with a pre-amplifier designed for airborne use and a scale to show the small size.*

Figure 10. *Use of vacuum tube accelerometers to measure shock motion during the landing impact test of an airplane structural model.*







to this standard a description of the effect of the above properties on the accuracy of shock and vibration pickups and a discussion of the advantages and disadvantages of the different methods for making shock and vibration measurements.

The ever increasing availability of shock and vibration pickups of good accuracy is providing a steady flow of new information on dynamic effects and is gradually changing the art of good design for shock and vibration into a science. It is hoped that the series of standards, of which American Standard Z24.21-1957 is the first, will contribute to this technological advance.

CARBON TETRACHLORIDE

What the American Standard acceptable concentration means to you

by **W. F. von Oettingen, M.D., Ph.D.**

MANY people are aware in a rather vague way that carbon tetrachloride is a toxic material but are unable to appraise its toxicity because of inadequate information. The American Standard on Maximum Acceptable Concentration of Carbon Tetrachloride, Z37.17-1957, is a timely and much needed publication that properly fills this gap. Large volumes of carbon tetrachloride are used as solvent, as a dry cleaning agent, and in fire extinguishers, and its use has often given rise to severe and even fatal poisoning. The purpose of the American Standard is to serve as a guide for manufacturers, consumers, and the general public for the safe handling of the solvent.

Committee Z37 of the American Standards Association has studied for many years the existing experimental and clinical information published in the world literature on the toxicity of carbon tetrachloride, as well as other evidence of its injurious action observed in industrial operations where it is handled. After careful scrutiny of all available information the committee proposed that the maximum acceptable concentration should be "25 parts of carbon tetrachloride per 1,000,000 parts of air, corresponding to 0.157 mg per liter at 25 C and 760 mm Hg, for exposures not exceeding 8 hours daily, with the understanding that variations should fluctuate around 10 parts per million."

Dr von Oettingen was chairman of the subcommittee that did the preliminary work to determine the acceptable concentration of carbon tetrachloride for approval as American Standard. He is with the Laboratory of Pharmacology and Toxicology, National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, U.S. Public Health Service, Department of Health, Education, and Welfare, Bethesda, Md. The U.S. Public Health Service acted as Endorsing Sponsor for the standard and recommended its approval. Although the standard is primarily intended for use in industry as a guide for industrial exposures to workmen, the committee's studies and recommendations are also important to the general public, Dr von Oettingen points out.

The committee's proposal was subsequently approved by ASA as American Standard.

The value of 25 parts per million means that in a room of 10 x 12 x 16 feet dimensions or 1920 cubic feet capacity and without ventilation this limit would be produced by the evaporation of only one half of one ounce of carbon tetrachloride.

This low value illustrates the great hazards involved in the handling of carbon tetrachloride if proper precautions are not observed. Whereas the large industries are generally aware of these dangers and control them by proper ventilation and other precautionary measures, the small operators and the general public all too often do not realize the dangers connected with the use of this solvent.

As pointed out in American Standard Z37.17-1957, inhalation of the vapors of carbon tetrachloride and of solvents containing it may lead to acute illness, characterized by sleepiness, headache, nausea, vomiting, and narcosis. It may also result in prolonged illness due to liver and kidney injury and their consequences; and even to death from paralysis of the brain or irreparable injury and failure of the organs mentioned.

Up to this time no reliable information has been available as to the maximum acceptable concentration of carbon tetrachloride in the inhaled air that should be considered safe for most persons. It is only with the development of this standard that such a reliable figure is available.

Even this low figure as explained above does not fully indicate the severity of the actual exposure to carbon tetrachloride. Close to the site of the application of the solvent, as during the removal of spots from garments or paint from floors, much higher concentrations than in the general atmosphere will be encountered at the breathing level of persons engaged in these tasks, so that the evaporation of much smaller quantities than one half of one ounce will result in harmful and even dangerous concentrations. Since the vapors of carbon tetrachloride are much heavier than air, they are not uniformly distributed in the atmos-

phere but have the tendency to accumulate at lower levels and especially in pits. It is therefore evident that carbon tetrachloride should never be used without adequate ventilation, and that, in the absence of a proper exhaust system, this should be provided by opening windows and doors whenever carbon tetrachloride is used.

One of the advantages of the use of carbon tetrachloride as solvent and dry cleaning agent is its nonflammability. While this is true, it is often not recognized that the contact of its vapors with an open flame or a hot object, as a hot electric heating plate or an electric short circuit, will result in the formation of phosgene, chlorine, and hydrochloric acid vapors, the two latter being highly irritant substances. This danger is also pointed out in American Standard Z37.17-1957. The formation of phosgene is especially fraught with danger. Whereas hydrochloric acid and chlorine are irritant gases and therefore may act as warning signals, phosgene may produce severe injury of the lungs even in concentrations which produce no marked irritation of the mucous membranes. The development of such pulmonary injury is insidious, always dangerous, and often fatal. For this reason carbon tetrachloride should never be used where contact with an open flame or glowing metal is possible.

The text of the standard mentions also another generally unknown or unappreciated fact, namely, that the ingestion of even small quantities of alcohol tremendously increases the toxicity of carbon tetrachloride. For this reason it is of paramount importance that no alcoholic beverages are ingested prior or during the handling of carbon tetrachloride.

It is also pointed out that the intimate contact of carbon tetrachloride with the human skin will cause irritation and, because of its solvent qualities for the protective fats of the skin, this will cause chapping and a predisposition to secondary infections of the skin.

Finally it is pointed out that the ingestion of carbon tetrachloride has repeatedly given rise to severe and fatal poisoning. For this reason carbon tetrachloride should not be kept in bottles usually used for beverages and, in any case, containers holding carbon tetrachloride should be labeled properly, so that no mistake is possible, and should be stored out of the reach of children.

Further, American Standard Z37.17-1957 lists also the physical-chemical data of carbon tetrachloride and gives directions as to the sampling procedure and analytical methods for determining its concentration in air. The standard is annotated with a bibliography which permits the finding of more detailed information.

In summary, it may be stated that the American Standard on Maximum Acceptable Concentration of Carbon Tetrachloride not only gives the concentration of this material in air, that should not be exceeded, but it also supplies much additional information that is essential for the appreciation of the dangers connected with its use and safe handling. For these reasons it is desirable that this standard should find the widest distribution, and it is hoped that the dissemination of such knowledge will be instrumental in reducing the incidence of carbon tetrachloride poisoning.

Copies of American Standard Maximum Acceptable Concentration of Carbon Tetrachloride, Z37.17-1957, can be obtained from the American Standards Association at 50 cents each. Send check with your order to avoid invoicing charge.

DIAMOND WHEELS

American Standard B74.1-1957, Identification Code for Diamond Wheel Shapes, is available from the American Standards Association at 75 cents per copy.

An American Standard code for identifying diamond wheels by their shape has been approved and published by the American Standards Association. The new code uses a series of numbers and letters to describe the shape of the wheels, based on four components—the basic core shape, the shape of the diamond cross section, the location of the diamond section, and modifications.

The diamond wheel industry has grown rapidly and a great many different shapes of wheels are now needed to perform operations that only a few years ago had not been considered suitable for diamond wheel applications. As a result, the system formerly in use is no longer applicable, and cannot be adapted or extended to cover the variety of new shapes now being used, the industry committee that developed the new coding system explains. It believes that every conceivable shape of diamond wheel can now be typed by use of the symbols given in the new standard. The system has been approved by a large majority of diamond wheel manufacturers.

The identification system is made up of a combination of numbers and letters. A number designates the core shape; a letter designates the shape of the diamond cross section; a number designates the location of the diamond section on the core; and a letter designates a modification. Charts included in the standard show the components of the system in relation to standard wheel shapes.

Each of the four components are clearly defined and explained.

An appendix lists both the old and the new diamond wheel shape numbers, enabling the user to become familiar with the new system.

The Grinding Wheel Institute submitted the code to the American Standards Association for approval. The Industrial Diamond Association of America, Inc, and the Grinding Wheel Institute will serve as sponsors for a sectional committee that is being set up on diamond abrasives and that will also handle future revisions of the standard.

GLASSWARE

for the World's Laboratories

USA delegation finds international technical committee making good progress on construction standards, reproducible tests, and interchangeability

A THREE-MAN delegation from the USA attended a meeting of the Technical Committee on Glassware and Related Apparatus, TC 48, of the International Organization for Standardization, at London, England, May 7-10, 1957. This was the first time the USA had been represented at a TC 48 meeting, and those present were enthusiastic about the work accomplished. Members of the USA delegation were Dr Robert D. Thompson, Taylor Instrument Companies, chairman; Olaf Loytty, Corning Glass Works; and Charles Collett, National Bureau of Standards.

"Participation by the USA provided a unity of action whereby the international group was able to achieve more than at any previous meeting," commented Ernest L. Ruh, Esso Research & Engineering Company, Linden, N.J., after the delegation's return to the USA. Mr Ruh is chairman of the U.S. committee responsible for work with ISO Technical Committee 48. "Six draft proposals were recommended for approval, representing agreement on major subjects which have been a source of contention for many years," he said.

Dr Thompson, chairman of the delegation, reported that agreement was reached by the seven nations participating in the meeting to submit the following Draft ISO Recommendations to letter ballot of the 11 member bodies participating in TC 48:

1. Interchangeable conical ground glass joints
2. Principles of construction and adjustment of volumetric glassware
3. Burettes
4. Principles of construction and adjustment of liquid-in-glass laboratory thermometers
5. Principles of construction and adjustment of hydrometers
6. Methods of thermal shock tests for laboratory glassware

Several of these draft proposals will require additional work and study by the U.S. group. A counter proposal is to be developed and presented within six months on the subject of interchangeable joints in an effort to secure a completely acceptable compromise of American and European practices.

For burettes, the National Bureau of Standards will conduct studies to check variances in fluid delivery time as determined by the United Kingdom and USA authorities. Subcommittee 17 on thermometers of ASTM E-1 will be asked to investigate methods for determining bulb stability in an effort to resolve the only remaining disagreement between U.S. and European methods.

Dr Thompson's report said that for hydrometers, the changes made, while accepted in principle, will be referred to subcommittee 18 on hydrometers of ASTM E-1. The Europeans made important concessions on this latter subject by agreeing to include the ASTM pattern for specific gravity and density hydrometers used in petroleum testing.

Dr Thompson added that the meeting gave evidence that the Europeans are ahead of us in several areas in this important field of laboratory glassware and related apparatus.

"By being present," Dr Thompson said, "the USA delegates were able to substantiate several basic U.S. viewpoints which received approval and recommendation for adoption by the other participating nations."

Dr Thompson concluded his report by saying: "The delegation is of the strong opinion that U.S. representation at these conferences should be continued. Frequently, in the past, the opinion has been expressed that the U.S. can contribute to this type of work but can expect very little benefit in return. The present conference was a revelation to the delegates for it appears that in many areas we have much to learn."

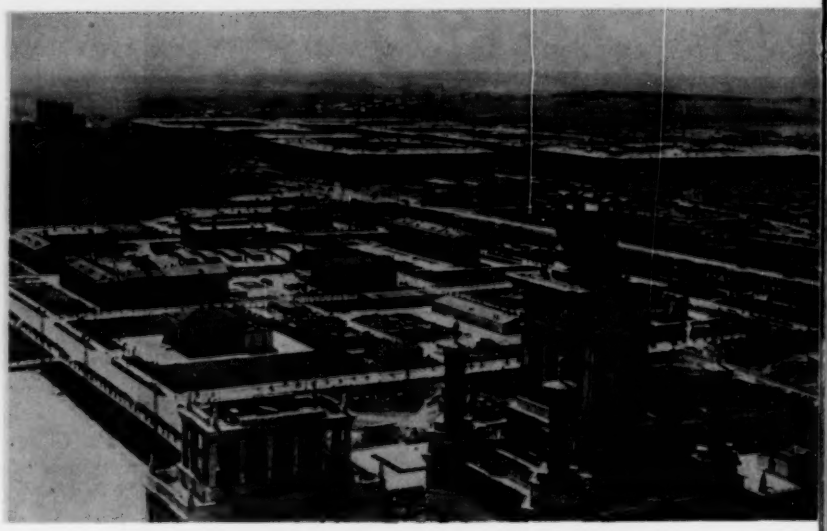
The nations participating in ISO/TC 48 are: Australia, Austria, Belgium, France, Germany, India, Italy, Netherlands, Sweden, United Kingdom (Secretariat) and the United States of America. Nineteen other countries are observer members.

A number of other international bodies, including the International Commission on Glass, International Legal Metrology Organization, International Union of Pure and Applied Chemistry, and the World Meteorological Organizations, maintain liaison status with ISO/TC 48 and had observers at the recent meeting.

Two tall office buildings *and an apartment house accent Moscow skyline as seen from University grounds. Sports stadium directly across Moscow River, is USSR's largest sports center. Main stadium, right, seats* 100,000. *Other buildings include small stadium for hand games, indoor arena, and large outdoor swimming pool. Below—View of housing development from twenty-fourth floor of University. USSR is working on slogan "Everyone out of log cabins into flats by* 1960."

Except where otherwise indicated, photos are by S. David Hoffman

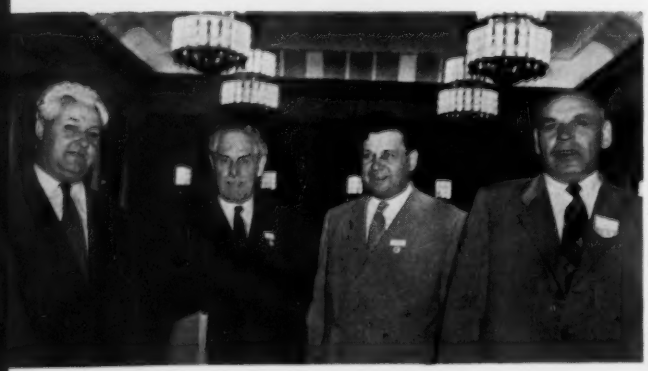
R. C. Sogge, *president of U.S. National Committee of IEC, about to board plane at Idlewild Airport for trip to Moscow.*



THE IEC IN MOSCOW

by **R. C. Sogge and S. David Hoffman**

At the IEC plenary session—*(left to right) G. Vovchenko, Pro-Rector, Moscow University; P. Dunsheath, IEC President; A. Pavlenko, now Minister of Power Stations, chairman of Organizing Committee for IEC meeting; D. Chizhov, vice-chairman of the committee.*



Fotokhronika Tass—Photo by A. Stuzhin and E. Yevzerikhin

SUBSTANTIAL technical accomplishments, combined with a remarkably free behind-the-scenes view of power stations and industrial plants, made the meeting of the International Electrotechnical Commission in Moscow an outstanding occasion. The national standards bodies of 27 countries [1] were represented, with a total of more than 500 delegates at-

[1] Australia; Austria; Belgium; Canada; Czechoslovakia; Denmark; Egypt; Finland; France; Germany; Hungary; India; Israel; Italy; Japan; Netherlands; Norway; Poland; Rumania; Sweden; Switzerland; United Kingdom; United States of America; Union of Soviet Socialist Republics; Yugoslavia.

Observers from the People's Republic of China and the Korean People's Democratic Republic were also present.

IEC President *P. Dunsheath (United Kinkdom), at podium, opened the meeting in the Main Hall of the 32-story Moscow University building. Earphones were used for simultaneous translation in English, French, and Russian. Many of the interpreters at technical meetings had engineering training; all handled the work efficiently, delegates report.*

At IEC/TC 34 meeting *on Lamps, USSR delegates (interpreters in rear) listen closely to technical discussion. USSR followed USA practice of having only one delegate speak for its national committee at each meeting. USSR backed proposal for photo lamp designation plan with USA as administrator.*

W. P. Lowell, Jr, *gives USA views at lamp meeting.*

tending. The delegation from the USA, included 24 representatives.

The Committee for USSR Participation in International Power Conferences acted as host, with A.S. Pavlenko, First Deputy Minister of the USSR Ministry of Power Stations as chairman of the Organizing Committee. While the meetings were in progress, Mr Pavlenko was named Minister of Power Stations as successor to Georgi Malenkov. One of his first official duties in this new assignment was to receive the IEC delegates at the reception given for them by the Ministry.

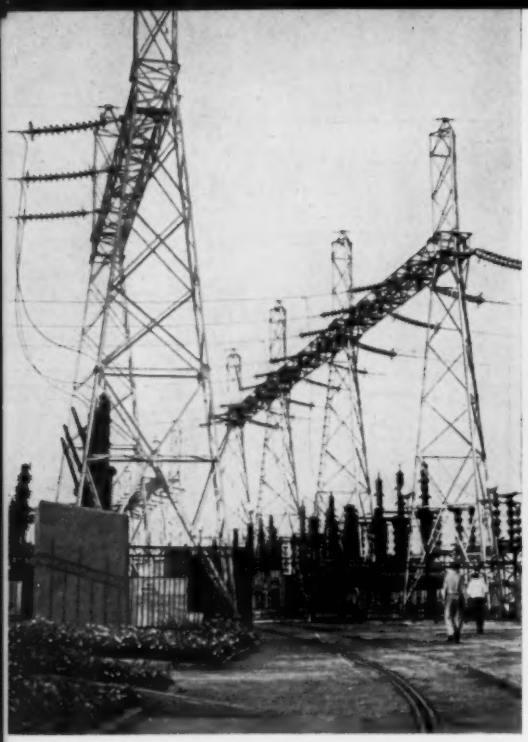
Mr Sogge is manager, Engineering Standards, General Electric Company, and president of the U.S. National Committee of the International Electrotechnical Commission. He headed the USA delegation to the IEC meeting at Moscow.

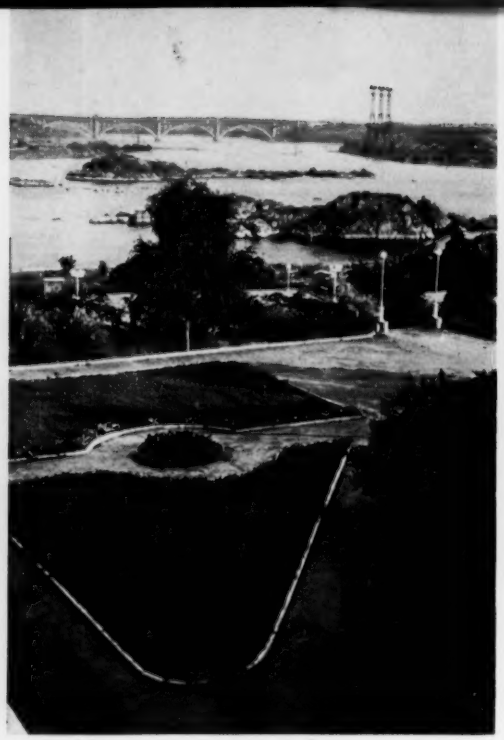
Mr Hoffman is Electrical Engineer, American Standards Association, and secretary of the U.S. National Committee of the IEC.

In addition to Mr Pavlenko, the delegates were welcomed by A.M. Nekrasov, vice-president of the Committee for USSR Participation in International Power Conference; A.E. Viatkine, president of the USSR Standards Committee, and G.D. Vovchenko, Pro-rector of the Moscow Lomonosov University.

Arrangements for the technical meetings were well handled. The USSR itself was represented by highly competent technical delegates and some of the top people in the Ministry of Power Supply attended both the technical sessions and the social gatherings. Standardization is a huge activity in Russia. There are 3,000 people in the Committee on Standards, Measurements, and Measuring Instruments, of the USSR Council of Ministers. They keep in touch with everything that is going on in other parts of the world. All technical material that they receive is translated into Russian —including American Standards and THE MAGAZINE OF STANDARDS.

Some of the activities of the Russian Standards





Zaporozhye visit *combined tour of the Dnieper Hydro-Power Station and the Transformer Works. Far left— The switchyard of the power plant. Center — Dnieper River with distribution towers and*

Committee are indicated in the table of contents of the magazine, *Standardization,* published bimonthly by the Committee. Copies of the magazine are filed in the Library of the American Standards Association. A translation of the table of contents of the most recent issue received by ASA is given on page 000.

Competent interpreters made the IEC technical meetings move along efficiently. To our surprise we found that many of the younger Russian delegates could speak English well. Formerly, German had been the primary foreign language studied in the schools; today it is English, we found.

Sixteen technical committees held meetings in Moscow, in addition to the Committee of Action, the final authority on all technical questions.

A number of draft recommendations were accepted for circulation to the National Committees of the 32 members of the IEC for final vote. They cover:

Rotating Electric Machinery (Excluding Machines for Traction Vehicles), revision of IEC Publication 34-1. This includes changes in temperature rises as well as in the reference temperature for declaring losses and efficiencies, and requirements for marking rotating plates.

Standard Dimensions for Motors, revision of IEC Publication 72

Service Outputs for Portable Lighting Batteries and Hearing Aid Batteries, Appendix to IEC Publication 86

Tests on Oil-Filled Paper-Insulated Metal-Sheathed Cables and Accessories for Voltages up to 275 kv

Polycrystalline Semi-Conductor Rectifiers

Tungsten Filament Lamps, Amendments to IEC Publication 64

Prefocus Screw-Type Caps

Bayonet-Type Automobile Caps

Designations for Lamp Caps and Holders. Part of second edition of IEC Publication 61

Ballasts for Fluorescent Lamps. Amendment to IEC Publication 82

Tubular Fluorescent Lamps for General Lighting Service

Bushings for Alternating-Current and for Voltage above 1,000 Volts

Rules for Selection of Circuit Breakers for Service, Chapter 4 of IEC Publication 56

Rules for Erection and Maintenance of Circuit Breakers, Chapter 5 of IEC Publication 56

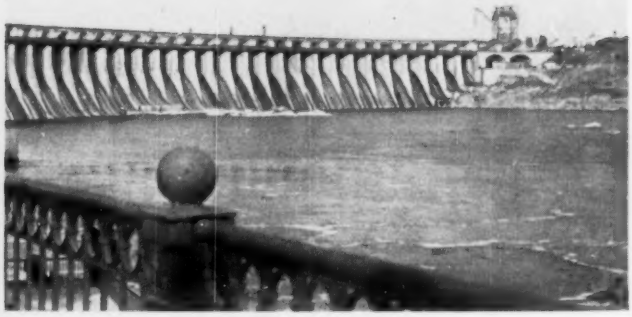
In addition, IEC was authorized to publish three new international recommendations. These are:

Rules for Auxiliary Machines on Motor Vehicles (Electric Motors and Generators)

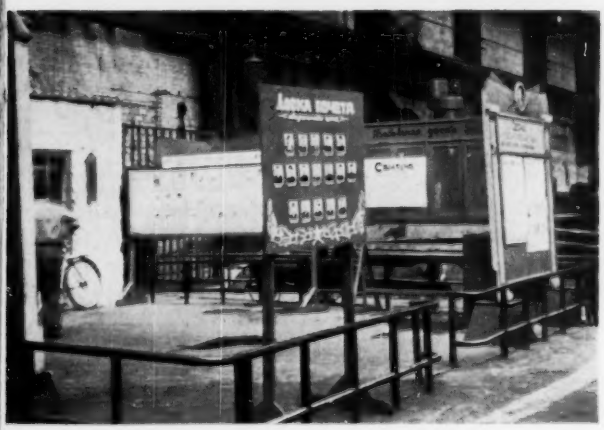
Rules for Electric Transmission of Vehicles with Diesel Motor (Main D-C Motors and Generators)

Gauges for E27 and E40 Lampholders

Of special interest to the USA was the suggestion by the USNC that an international system of coding to identify lamps used in motion pictures and still picture projectors be developed, similar to the three-letter coding system used in the USA. The U.S. National Committee offered to serve as the agent of the Central Office of IEC in assigning and recording for a nominal charge these code designations on an



lines in right background, looking across grounds of power plant. This is the former Dnepropestrov plant built with the help of American engineers and rebuilt after its destruction in World War II. It is equipped with nine Fransis turbines and 90 mva generators. Above—Dam of hydroelectric station has concrete spillway 760.5 meters long; reservoir capacity of 3,330 million cubic meters. Right—Manager of power station, in white uniform, gave delegates a running account of power station operation with historical side comments. Below—Working conditions in the Transformer Works were of special interest. Photographs of workmen with high production records are displayed on Honor Board shown in lower picture.



international basis, and the USSR group was among the delegations present at the meeting of TC 34 on Lamps that indicated they were in favor of this method of handling the proposed system. The proposal, which poses a rather unique question of policy for the IEC, will be on the agenda for discussion by the Committee of Action at the next general meeting of the IEC.

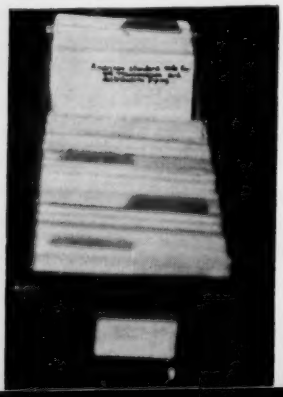
Two new technical committees were set up during the meetings. One is to develop recommendations on fans other than the industrial type. India has accepted the secretariat. The other is on electrical equipment for machine tools, IEC/TC 44, and Switzerland was offered the secretariat.

A new subcommittee will work on electronic measuring instruments under Technical Committee 13, to be identified as Subcommittee 13 C on Electronic Measuring Instruments. The USSR has accepted the secretariat for this subcommittee.

Work in the field of nuclear energy was considered, and IEC Technical Committee 1 on Nomenclature is being asked to make whatever additions may be necessary in the International Electrotechnical Vocabulary. These will apply particularly to electric power stations that make use of nuclear fuel, and electrical measuring instruments used for the detection and measurement of radiations. As a background for other technical committees in preparing requirements for use of apparatus which is exposed to radiation, Technical Committee 15 is being asked to study the behavior of insulating materials under radiation, in addition to their other properties. A new Working Group

A subway ride *is a "must" in Moscow and Leningrad as in New York. Delegates found clean, airy subway platforms were dedicated to special themes. Above—In Leningrad subway, Science Platform displays plaques honoring eminent Russian scientists. Right, above — Inside subway car. Right, below—Poet's statue at end of Pushkin Platform.*

The impressive Lenin State Library *contains* 17 *million books in* 166 *languages, delegates were told. USA delegates, opening card catalog shown at right of main entrance, found card for an American Standard.*



was formed to make suggestions for standardization in the nuclear field. Its work will be undertaken as preparation for a new Technical Committee that may be set up to prepare recommendations on electrical measuring instruments used in connection with radio isotopes and in making safety measurements in the nuclear field.

It was also decided that IEC Recommendations will

СССР
МИНИСТР
ЭЛЕКТРОСТАНЦИЙ

11 июля 1957 г.

Дорогой друг,

Сессия Международной Электротехнической Комиссии, состоявшаяся в СССР впервые за много лет явилась очень приятным событием для меня и моих коллег. Работа делегатов многих стран в течение двух недель июля этого года внесла большой вклад в дело дальнейшего развития электротехники и помогла инженерам-электрикам в работе по международной стандартизации.

Но еще больше она сделала в деле укрепления духа дружбы между народами, к которой стремится советский народ.

Я очень рад, что Ваша работа имела такой успех и я желаю Международной Электротехнической Комиссии дальнейшего прогресса.

А.С. ПАВЛЕНКО

Message from A. S. Pavlenko, Minister of Power Stations of the USSR, to Dr Percy Dunsheath, President of the International Electrotechnical Commission on the termination of the IEC General Meeting in Moscow, July, 1957.

Dear Friend,

The meeting of the International Electrotechnical Commission, held in the USSR for the first time after many years, has been a source of great pleasure for me and my colleagues. The work of the delegates from many countries during the first two weeks of July of this year has made a great contribution to the development of electrical technology, and has helped electrical engineers to further international standardization.

But even more, the meeting has contributed to the strengthening of friendship between peoples, to which friendship the Soviet people aspire.

I am very glad that your work has been so successful and I wish the IEC continued progress in the future.

(Signed) A.S. Pavlenko

In front of GUM *department store, long lines of people wait for hours to visit Lenin and Stalin Mausoleum, near St Basil's Cathedral, right background. Inside store (right), shoppers gathered quickly to watch delegates buy luxury items.*

henceforth be published in two editions. One is to include both English and French (as is done at present); the other will be in Russian and English.

When delegates were not occupied with their technical committees they were taken on tours of large electric apparatus plants, a transformer works, an automobile factory, a radio tube plant, and a cable manufacturing plant. While at Leningrad they toured the Direct-Current Research Institute. They also visited Zaporozhye in the Ukraine and toured the Dnieper Hydro-Power Station plant (the pre-war Dnepropetrokvs installation), as well as the Transformer Works.

The Transformer Works produces oil-cooled, three- and single-phase power transformers (unit capacities are from 560 to 123,500 kva at voltages up to 420 kv); single-phase and three-phase autotransformers with unit

The USSR Agricultural and Industrial Exhibition *was visited with interest. The 21 pavilions are devoted to a permanent display of USSR achievements in agriculture and industry. Delegates noted groups in native dress from many parts of the country touring the exhibits. Inside the heavy industry pavilion (below) posters on wall show production goals above exhibit of trucks and buses produced in the USSR.*

Delegates noted interest *with which Moscow street crowd examined American Chevrolet which had been parked in front of Metropole Hotel.*

In this typical street scene, *small Russian car is in foreground; larger (ZIS now ZIL) cars in background are used by USSR officials.*

capacity up to 180 mva at voltages up to 400 kv; disconnecting switches for 154, 220, and 400 kv; instrument current transformers for differential relay-protection and for measuring in high-voltage plants at 154, 220, and 420 kv; and metal-clad gears of 10 kv class with single bus system and air insulation.

The delegates were informed that the USSR is planning a 1,000 mile direct-current transmission line, connecting Moscow with power sources in Siberia. Turbo-generators rated at 150,000 kva are in operation, they were told, with others rated at 200,000 kva in process of construction. The delegates also saw 400 kv power circuits in operation.

The list of technical visits included the Mosenergo Thermal Power Station, one of the nine that provide Moscow with heat as well as light and power; the Moscow Cable Works, and the Moscow Energetic Institute Laboratories, the country's most important school for training electrical engineers, steam and

A visit inside the Kremlin *was an unusual privilege offered by Ministry of Power Station's reception for delegates in Grand Kremlin Palace (left, foreground); Arkhangelsky Cathedral, one of ancient churches inside Kremlin walls, is next to the palace. Top, at right—Kremlin walls from inside. Below—Delegates stayed in 14-story Moscow Hotel (center of picture). Gray path in street marks lane reserved for official cars.*

hydro-power stations engineers, and radio engineers, now 50 years old. They also saw the Television Center and the Laboratories of the Electrotechnical Institute. In addition, they were invited guests at museums, libraries, and the ballet. Many of the delegates also took advantage of the entertainment facilities in both Moscow and Leningrad and attended the movies, puppet shows, concerts, and the opera.

Most of the USA delegates also found time to visit department stores and wander unescorted in the streets of Moscow and Leningrad. They found the stores crowded with people who seemed to be buying lower-priced goods, mostly necessities, and window shopping the more expensive luxury items.

The American delegation was interested in the fact that hotel rooms contained television sets, with about 8 to 12 inch screens, although larger screens were seen in the shops and in the information headquarters of the hotel.

Among the principal social events was a reception given by the Ministry of Power Stations inside the Kremlin walls, in the Great Hall of the Czar's summer palace, in addition to a reception by the Moscow City Soviet in the Hall of Columns of the House of Trade Unions, and a farewell reception given by the Committee for USSR Participation in International Power Conferences at the Metropole Hotel.

The reception inside the Kremlin was given a particularly memorable conclusion by the fact that after some of the guests had already departed, those remaining were allowed to wander into the meeting halls of the Supreme Soviet and Praesidium.

The delegates were treated graciously and hospitably throughout their entire stay in the USSR. The trips to power plants and industrial plants were most interesting, and we were permitted to take pictures almost without restriction. Industrially, Russia has developed substantially in the past 40 years. Up to the present time this industrial development has been largely centralized, with responsibility in the hands of a few individuals. Now, great progress is being made, causing problems that must bring about changes in the future. The responsibility is obviously becoming too heavy for a few individuals to carry. It seems clear that some decentralization will have to take place, and it appears that such a move is already underway.

WHAT USSR WRITES ABOUT STANDARDS

The following list comprises a complete translation of titles of articles in the most recent issue of *Standardization*, scientific and technical magazine of the Committee of Standards, Measurements, and Measuring Instruments of the USSR Council of Ministers. Italic subheads indicate departments of the magazine.

Widening of Rights of Satellite Republics in the Field of Standardizaton. An Editorial.

Feature Articles

Economic Basis for Standards. By Honorable Scientist and Technican E.A. Satel

Specimens of Mathematical Computation in Preparation of Standards for Mass Production. By Engineer P.S. Livshitz

Role of Statistics in the Struggle to Improve Quality of Production. By Bachelor of Science in Economics P.M. Rabinovich

On Selective Control. By Engineer N.A. Shamin, member of USSR Committee on Standards

Use of Preferred Numbers in the Construction of Electric Machinery. By Bachelor of Science G.S. Plis

On the Question of Standardization of Quality of Steel. By Engineer N.A. Shamin

Method of Manufacturing the Best Assortment of Prefabricated Reinforced Concrete Elements. By Bachelor of Technical Science V.V. Zhkharov

Unification in the Building Industry. By Bachelors of Technical Science V.A. Volnov and A.F. Gay

Complex Standardization and Unification of Ships' Stern Tubes. By Engineer I.L. Zelikson

Unusual Characteristics of Test Methods of Dynamo Steel Sheets According to GOST 802. By E.G. Chernyshev, working in the Mendelyeev Scientific Research Institute

On Mutual Compensation of Errors in Threads of Block Gages. By Bachelor of Technical Science G.M. Krivchenkov

Effect of Breaking Test Conditions on Characteristics of Fabrics. By I.S. Rusakova, Moscow Textile Institute

New State Standards

High Temperature Resistant Cast Iron. By Bachelors of Technical Science P.I. Durasov, B.S. Milman, and Engineer N.A. Aleksandrov

Antifriction Cast Iron Castings. By Bachelors of Technical Science I.O. Tsypin and N.P. Rataeva

Steam Power Plant. By Engineer E. M. Dubrovskii

Crankshafts of Automatic Presses. By Engineer M.L. Ruskevich

Ethyl Alcohol. By Engineer P.I. Popov

Atmosphere-Resistant Oil Paints. By Bachelors of Technical Science S.V. Jakubovich, V.A. Zubchuk, and M.P. Peresvetova

Granular Ammonia Saltpeter. By Engineer A.A. Vlasova

Comments and Proposals on Standards

System of Tolerances for Thickness of Steel Pipes. By Engineers I. Ju. Korobochkin and G. Ja. Ostrin

On the Revision of Standards for Diesel Fuel. By Engineer P.M. Golenev

V-Belts. By Bachelor of Technical Science A.A. Jafanovich

To Improve GOST Standard for Tractor Crankshafts. By Bachelor of Technical Science V.V. Polovnikov

Sizes of Storm Specimen for Compression Testing. By Engineer Geologist A.M. Viktorov

Difficulties of GOST 591. By Engineer D. Kh. Multatuli

In the Committee of Standards, Measurements, and Measuring Instruments

In the Export Committee

In the Committee on Bolts

Preparation of New Standards

From Material Received by the Editorial Office

Standardization of Products and Their Components

On the Drawings and Technical Recommendations in the Metal Construction Industry

Replies and Comments on Published Articles and Letters

International Organization for Standardization

Draft ISO Proposal for Rogan Test on Solid Fuels

Sixth Meeting of ISO/TC 61 on Plastics

Standardization in Other Countries

Survey of the American Standards Association

From Technical Magazines

Translation from a German article by Dr Ing in Science Kohlitz on Unification Through Reduction of Number of Standard Sizes

USA delegation *at meeting of IEC Technical Committee* 17 *on Switchgear and Controlgear. In third row (left to right) is C. W. Linder, vice-president—engineering, General Electric Co.; L. W. Cole, chairman of the Board, Federal Pacific & Electric Co.; and G. W. Heumann, General Electric Co.*

Shy interpreter *was teacher of English at University who had worked with groups of prospective interpreters all winter, helping them improve their English for the IEC meetings.*

The National Acceptance of International Standards

Excerpts from Third Charles le Maistre Memorial Lecture presented by Professor Reginald O. Kapp at International Electrotechnical Commission meeting, Moscow, July 5.

A STANDARD specification could be perfectly logical, comprehensive, clear, attractively worded, constructed in the most methodical manner; it would still be useless if it had not been prepared with a due sense of what is relevant to the situation. If engineers did not take the whole world of reality into consideration, with all its faults and blemishes, if they did not hospitably welcome to their debates all relevant facts, including the troublesome ones, the regrettable ones, the ones that contradict their most cherished convictions, they would be as far from reaching agreement among themselves as are the philosophers.

A sense of relevance is, in this context, equivalent to a sense of reality.

In international standardization the relevant facts are numerous and complex. Many of them are, of course, scientific, and scientists are in the habit of marshalling and carefully considering these. But standardization cannot be achieved in an atmosphere of pure, abstract science; no IEC technical committee is a self-contained unit; it cannot concentrate on its immediate task and ignore the rest of the world. If international standards are to be accepted nationally, sundry non-technical obstacles must first be surmounted and this can only be done by a realistic approach.

One of the relevant facts that a technical committee sometimes has to cope with is that a decision within its own terms of reference has already been reached elsewhere. It may have happened in another technical committee of the IEC, or in one of the associated national committees, or in some other international organization. If it is a good decision it is to be welcomed; but if not so good, a problem arises. A solution may have to be sought by negotiation; there may have to be a compromise; there may be an appeal to higher authority; the views of others may have to be obtained; perhaps the regretted decision may have to be accepted. The outcome may then not be perfection, but it will be the one that gives the best service to the engineering world.

The occasions are more hampering when a decision has not been reached by any definable debating body but has been anticipated by circumstances. In electrical engineering, progress is rapid and those engaged in it cannot always wait for concerted action even by their own countrymen, let alone by colleagues in distant parts of the world. They rightly and necessarily

Kapp and the Le Maistre Lectures

The Third Le Maistre Lecturer, Professor Reginald O. Kapp, is chairman of the Philosophy of Science Group of the British Society for the History of Science, and a member of the governing body of several teaching institutions and educational committees. He is chairman of a number of British Standards Committees, and a member of other committees, both national and international. He has written three books on the philosophy of science, a book on the presentation of technical information, and numerous papers and articles on engineering, philosophy, and other subjects.

After his graduation in engineering from the University of Birmingham in 1909, he obtained his first employment with Brown, Boveri & Company of Baden, Switzerland, in their department of electric traction. On his return to England in 1913 he joined the staff of Kennedy & Donkin, consulting engineers, of London, where his work was chiefly concerned with electric traction, power station design, transmission systems, and economic problems. He was entrusted with the design of the British Grid system for which the Electricity Commissioners employed Kennedy & Donkin as their consultants. From 1935 to 1950 he held the Pender Chair of Electrical Engineering in University College, London, and was both Dean of the Faculty of Engineering in the University of London and member of the University Senate during the last four years of that period. Since 1950 he has been consultant to Kennedy & Donkin.

Purpose of the lectures is to perpetuate the memory of the outstanding services given to the Commission by Charles le Maistre during his 49 years as General Secretary. At the same time it is intended that they contribute to the progress of international electrical standardization.

The first Lecture was given at the Royal Institution, London, July 5, 1955, by André Lange (France) on the subject "Charles le Maistre: His work, the IEC."

The second Lecture was given at the Town Hall, Munich, on June 29, 1956, by Clarence H. Linder (USA), who spoke on "Standardization—Virtue and Necessity."[1]

[1] MAGAZINE OF STANDARDS, September, 1956, page 270.

act first and think about standardization afterwards. On such occasion what is may stand in the way of what ought to be.

But fortunately the occasions are quite rare when engineering practice so commits the future that standardization is thereby handicapped. Designs are soon superseded and what is does not continue; it turns into what has been.

An important, and perhaps the largest, part of standardization, both national and international, is not concerned with the elimination of unnecessary types and sizes, not with what is sometimes called "simplification," but with standards of quality and performance. These are often best assured by standardizing methods of test. For these methods what is does not stand in the way of what ought to be. Established practice rarely, if ever, makes it difficult to reach the right decision and international standards are, as a rule, readily accepted by national committees.

It is, indeed, rare for a national committee to make any reservation at all about a proposed standard for performance and test, once the proposal has passed all its early stages of scrutiny and discussion. But reservations have sometimes had to be made concerning limits of temperature rise. These are prompted by climatic considerations. It is fortunate, however, that a difference between various standards for temperature rise can be easily defined. Accurate allowance can be made for it when material manufactured to different national standards is being compared. When a person buys a piece of apparatus or machinery that has been manufactured in any given country he need be in no doubt, thanks to the IEC, as to the meaning of the figures on the rating plate. This is no small achievement.

Problems for IEC technical committees are sometimes raised by economic considerations. This may occur when an attempt is being made to specify standard tests. It may be most desirable to verify certain performance data and at the same time very costly to do so. Examples are the ability of large transformers to withstand the mechanical forces imposed by short-circuits, the capacity of components of a power system to withstand surge voltages, the rupturing capacity of circuit breakers designed for large systems. If scientific considerations alone had to be met, there would be no doubt concerning the desirability of standards for all such performance data together with standards for the means of verifying them. But there is often a wide gap between what is scientifically ideal and what is economically wise. Cost is expressed admittedly in terms of currency, but cost is really a measure of human effort and it is the engineer's function and duty to economize this. If the effort needed to proceed from 90 percent to 100 percent perfection is great, the proper engineering decision is to be satisfied with the 90 percent.

The economic limits to international standardization are complicated by the fact that the resources of those who manufacture plant are not equal. In one country there may be several works equipped with the means of conducting a type of test that cannot be performed at all in other countries. Such discrepancies have to be faced. They, too, are relevant facts. A standard must be capable of more or less universal application if it is to have any international value, and it cannot be capable of this if only a few are able to conform to it.

In practice I have never known standardization to be followed by stagnation. Inventors are not rendered sterile by the existence of standards. If a designer can produce something better than, and quite different from, what is specified in a standard he does not make a secret of his achievement; he boasts about it. Language is not frozen by the existence of technical vocabularies. When progress brings new concepts, new words are invented for them, words that are not yet in the dictionary.

It is always too soon to standardize anything, — and it is always too late. If one makes a rule only to standardize when the time is ripe for it, one will never standardize. It is always too soon because later experience is sure to supersede a decision reached now; and it is always too late because practice has already anticipated the decision. But if standards are treated as they should be, as though they were living things, and are adapted to changing circumstances, the verdicts "too soon" or "too late" become irrelevant.

An aspect of standardization that facilitates the national acceptance of international standards is that differences of opinion are rarely between nations. They occur far more frequently between manufacturers on one side and users on the other. Hence discussions in international and national committees are usually very similar. The problem in both is to reconcile the same differences in interests, experience, and outlook. The solution that is found best in an international committee is usually also found best in a national one. But even if national and international committees might reach identical conclusions without the collaboration that the IEC provides, the standards ultimately produced are all the better for having been based on the wide range of knowledge and experience that can be gathered in the world forum. For many purposes international standardization is so valuable that a second best standard is better than none. It is for this reason that national committees, when they brief their delegates, will, if they are wise, leave the delegates as free a hand as possible, with the promise to back whatever decision the delegate may support after having heard all the arguments on the subject.

Most international standardization represents a confirmation of current trends rather than a diversion from them and is based on existing national standards. Experience is a necessary foundation for any decision, and so standardization of anything can only be achieved by those who are actively concerned with its manufacture or use.

ISO Committee Recommends Basic Principles

STACO delegates in action (left to right) Dr H. Nitscher (Germany); S. D. Hoffman (SUA); Dr Lal Verman (India); Dr N. A. J. Voorhoeve (Netherlands); Dr J. M. Madsen (Netherlands); Dr J. Oderfeld (Poland). President of STACO is Dr M. A. Caquot (France).

STACO, the Standing Committee for the Study of Scientific Principles of Standardization of the International Organization for Standardization, met at Lisbon during the last week of June this year. The committee agreed on a number of recommendations, reported S. David Hoffman, Electrical Engineer of the American Standards Association, who attended the meeting instead of John W. McNair. Mr McNair, Assistant Technical Director of ASA, serves as the technical expert of ASA on this committee.

If approved by the ISO Council and the IEC Committee of Action, the recommendations agreed upon at the Lisbon meeting will be passed along to all technical committees of ISO and IEC to be used as a guide in their work. STACO's scope lies in the field of basic principles and broad problems that cut across many fields, such as the problems that arise in the application of different systems of units and the choice of preferred number series, and not in problems concerning specific standards.

One of the recommendations agreed on at the STACO meeting concerned homogeneous formulae. STACO agreed that where a formula appears in a standard, it should be homogeneous rather than empirical; i.e., so written that it need not be changed when someone applying the standard uses a different system of units than that in which the formula was originally written. If a formula written in a non-homogeneous manner is to be converted from one system of units to another system of units, the formula itself must be changed in order to be correct. STACO agreed that the homogeneous type of formula should be used wherever possible in all International Recommendations. It plans to spell out the details of how and why to write a homogeneous formula in a paper to be published and made available to all ISO and IEC committees.

STACO also recommended that international committees write their standards using the best practice from a technical viewpoint and not deviate from this aim more than is necessary to satisfy economic needs. This should be kept in mind, particularly, in connection with new standards, the committee recommended, and urged that a start be made as soon as possible in new fields or in fields where differing practices do not yet exist.

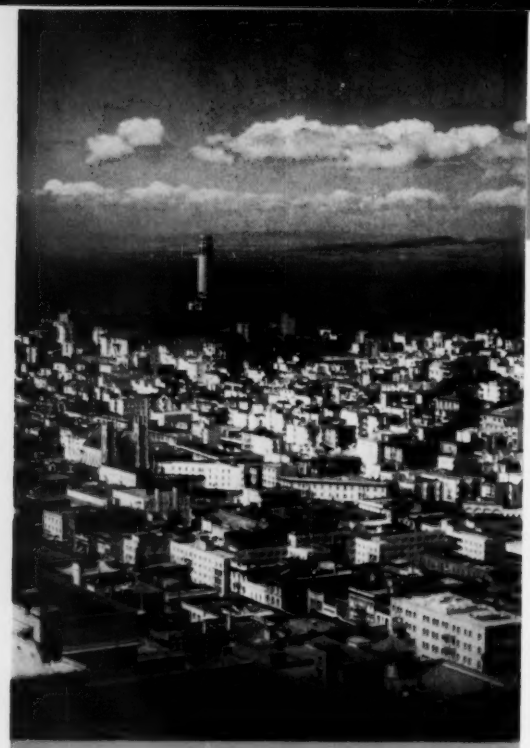
How far should standardization be applied? This was one of the questions considered by STACO. The committee decided that complete standardization of a product should probably never be accomplished but that standardization should be applied only to those characteristics of a product which would assure functional interchangeability where needed. In such cases, there should be some clear designation on the item indicating to all that it will serve as a satisfactory replacement. This clear designation is particularly important when a product is to be repaired in a country which uses a different set of units from that of the country of origin, the committee declared.

The tendency to write standards showing two different lines of products which are not exactly interchangeable was of special concern to STACO. This is done, it was explained, because these products are being made in countries using different sets of units. However, STACO recommended that continuing efforts should be made to arrive at a single line of products in only one set of units or a single line adaptable to both sets of units.

STACO has offered its services to the General Secretariat of the ISO to point out to the Secretariat cases in which it observes that committees need to coordinate their standards with those of other committees and are not doing so. It is requesting that the ISO Council ask all technical committees to pay special attention to coordinating their work with that of other committees.

In order to make its Resolutions more effective, STACO agreed that the Resolutions should be more fully explained and supported by examples in documents which STACO will prepare. It also agreed to form a working group to follow up the application of the STACO Resolutions to ISO and IEC Recommendations.

Wording a resolution—*Dr Lal Verman (India) confers with S. D. Hoffman (USA).*



Preliminary Program

EIGHTH NATIONAL CONFERENCE

Theme — Standards, Key to Progress and Profits

WEDNESDAY, NOVEMBER 13

9:30 A.M.: Thirty-ninth Annual Meeting of the American Standards Association

Joint Meeting of the ASA Board of Directors and Standards Council, Company Members, and Guests

Welcoming Address:

T. G. McGuire, President, Industrial Indemnity Company, San Francisco, Calif.

Keynote Address:

H. Thomas Hallowell, Jr, President, American Standards Association; President, Standard Pressed Steel Co, Jenkintown, Pa.

Report on the Past Year of Operations at the ASA—Vice Admiral G. F. Hussey, Jr, USN (Ret), Managing Director, ASA

The Standards Council: Review and Forecast—Arthur S. Johnson, Chairman, Standards Council; Vice-President, American Mutual Liability Insurance Company, Boston, Mass.

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2:00 P.M.: Government and Industry Use of National Standards—

Sponsored by the General Services Administration, the National Bureau of Standards, and the U.S. Department of Agriculture

Moderator—E. H. Weaver, Commissioner of the Defense Materials Service, General Services Administration

Panel

John Dunn, Staff Director, Standardization Division, Assistant Secretary of Defense (Supply and Logistics) Washington, D. C.

Dr A. T. McPherson, Associate Director, National Bureau of Standards, Washington, D. C.

Roy Benson, Asst. Manager, Industrial Department, National Safety Council

Karl Geiges. Vice-President, Underwriters' Laboratories, Inc, Santa Barbara, Calif.

John W. Parks, Supervisor, Inspection and Quality Control, Standard Oil Company of California

2:00 P.M.: Standards—Control of Exposure from Ionizing Radiation

Sponsored by the American Society of Safety Engineers

Opening Remarks—President, American Society of Safety Engineers

Chairman—Norval MacDonald, Chief Safety Engineer, Industrial Indemnity Company, San Francisco, Calif.

Speakers

Legislation and Administrative Regulations Concerning Ionizing Radiation—A. C. Blackman, Chief, Division of Industrial Safety, State of California.

Possible Hazards from Radioactive Fallout from Atomic Energy Power Plants—Dr Paul C Tompkins, Scientific Director, and Myron B. Hawkins, Head, Technical Developments Branch, U.S. Radiological Defense Laboratory, San Francisco, Calif.

Safe Disposal of Radioactive Material Waste—Albert L. Smith, U.S. Naval Radiological Defense Laboratory, San Francisco, Calif.

Permissible Radiation Exposure in Industry—Dr Hardin B. Jones, Donner Laboratory, University of California, Berkeley, Calif.

Control of Radioactive Isotope Exposure—Dr D. E. Hull, California Research Corporation, Richmond, Calif.

Entire Conference (includes Proceedings)	$21.50
For individual events—	
All sessions (without Award Dinner)	14.00
Award Dinner only	7.50
Individual session (each)	2.50
Proceedings	4.00

No fee for federal, state, and municipal personnel, except for Award Dinner.

Send advance registration to

American Standards Association, Incorporated
70 East 45 Street, New York 17, N. Y.

THURSDAY, NOVEMBER 14

9:30 A.M.: Cost Improvement Through Standardization

Sponsored by the American Society for Testing Materials

Presiding—G. J. Grieve, Pacific Paint & Varnish Company, San Francisco, Calif.

Moderator—R. W. Harrington, Manager, Clay Brick & Tile Association, San Francisco, Calif.

Speakers

Purchasing's Contribution to Cost Reduction Through Standards—H. W. Christensen, Director of Purchases, Columbia-Geneva Steel Division, U.S. Steel Corporation, San Francisco, Calif.

Employing Standards for Increased Productivity—Stanley R. Jepson, Ceramics Tube Development Engineer, Eitel-McCullough, Inc, San Bruno, Calif.

Standardization from an Airline Viewpoint—R. D. Kelly, Superintendent of Technical Development, United Airlines, Inc, San Francisco, Calif.

Prestressed and Precast Concrete—Robert E. Tobin, Civil Engineer, Portland Cement Association, Los Angeles, Calif.

ON STANDARDS

St Francis Hotel, San Francisco, California, November 13-15, 1957

9:30 A.M.: More Effective Buying Through Standardization

Sponsored jointly by the Standardization Committee of the National Association of Purchasing Agents and the Company Member Conference of ASA

Moderator—D. F. Engstrom, Development Supervisor, Cutler-Hammer, Inc, Milwaukee, Wisc.

Application of Standards to Purchasing Operations—E. O. Haymond, Purchasing Agent, Shell Oil Company, Portland, Oregon; Western Vice-Chairman, National Standardization Committee, NAPA

Cooperative Roles of Purchasing and Standardization—Harlan E. Cross, Purchasing Agent, United States Pipe & Foundry Company, Birmingham, Ala.; Chairman, National Standardization Committee, NAPA

Cost Reduction Through More Effective Buying (Film strip prepared by Northern California Purchasing Agents Association)—Carl M. Wilensky, Ames Harris Neville Company, San Francisco, Calif.; Standardization Chairman, Northern California Association

Updating Design Practices for Tomorrow's Engineering—R. A. Fuller, Engineering Department, Design Division, Division Engineer, E. I. du Pont de Nemours & Company, Wilmington, Del.

CMC Business Meeting—W. C. Cadwell, Chairman, ASA Company Member Conference; Caterpillar Tractor Company, Peoria, Ill.

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2:00 P.M.: Standardization in Your Company

Sponsored jointly by the Company Member Conference and the Standards Engineers Society

Moderator—Herbert G. Arlt, Materials Specifications Engineer, Bell Telephone Laboratories, Inc; President, Standards Engineers Society

Standardization in the Electronics Industry—S. H. Watson, Manager, Corporate Standardizing Division, Radio Corporation of America, Camden, N. J.

Standardization in the Petroleum Industry—W. C. Nidever, Shell Oil Company, Los Angeles, Calif.

Use of Punch Cards and Computers to Control and Evaluate a Standards Program—J. J. O'Farrell, Jr, International Business Machines Corporation, Poughkeepsie, N. Y.

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2:00 P.M.: Profiting by Standards in the Railroad Industry

Sponsored by the Association of American Railroads

Speakers

Economic Effect of Standards on Railroads—W. M. Keller, Assistant Vice-President, Operations and Maintenance Department, and Executive Vice-Chairman and Director of Research, Mechanical Division, Association of American Railroads, Chicago, Ill.

A Railroad Purchasing Agent Looks at Standardization—M. C. Nystrom, General Purchasing Agent-System, Southern Pacific Company, San Francisco, Calif.

Standardization As Viewed from Maintenance of Way—F. R. Woolford, Chief Engineer, The Western Pacific Railroad Company, San Francisco, Calif.; Vice-President, American Railway Engineering Association, San Francisco, Calif.

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6:00 P.M.: General Reception and Guests of Honor Reception – Annual Awards Dinner

Presiding—H. Thomas Hallowell, Jr, President, American Standards Association

Presentation of the Howard Coonley Medal and The Standards Medal

FRIDAY, NOVEMBER 15

9:30 A.M.: Industrial Standardization for Defense

Sponsored by the American Ordnance Association

Chairman—William E. Butts, President, General Metals Corporation, San Francisco, Calif.; President, San Francisco Post, American Ordnance Corporation

Moderator—Jerry L. Hayes, Chief, Measurement Standards Branch, U.S. Naval Ordnance Laboratory, Corona, Calif.

Speakers

A Practical System of Standardization—H. C. Biggs, Manager, Physical and Electrical Standards Department, Sandia Corporation, Albuquerque, N.M.

Standardized Measurements Provide Compatible Products—Colonel W. J. Darmody, The Sheffield Corporation, Dayton, Ohio

Automation and Standards in Industry—Dr Cyril P. Atkinson, University of California, Berkeley, Calif.

Computer Techniques for Standardization—Dr Montgomery Phister, Jr. Head, Industrial Control Systems, Computer Systems Division, The Ramo-Wooldridge Corporation, Los Angeles, Calif.

How to Get Standardization in the Military Electronics Industry—W. Wagenseil, Director, Industrial Systems and Controls, Hughes Products, Los Angeles, Calif.

(Title to be announced)—John J. Dunn, Staff Director, Standardization Division, Office of Assistant Secretary of Defense (Supply and Logistics) Washington, D. C.

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2:00 P.M.: How Standards Help the Motion Picture Industry

Sponsored by Motion Picture Research Council and Society of Motion Picture and Television Engineers

Speakers

Motion Picture Testing Film Program—Boyce Nemec, Consulting Engineer, New York, N. Y.

How Standards Aid the U.S. and Foreign Motion Picture Industries—Axel Jensen, Engineering Vice-President, Society of Motion Picture and Television Engineers; Director of Television Research, Bell Telephone Laboratories, Murray Hill, N. J.

Standardization Considerations in the Commercial Release of Stereophonic Tapes—Ross H. Snyder, Manager, San Francisco Section, SMPTE, San Francisco, Calif.

Standards in a Non-Standard Industry—W.F. Kelley, Secretary-Treasurer, Motion Picture Research Council, Hollywood, Calif.

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2:00 P.M.: Standardization for Technical Communication

Sponsored by the Technical Publishing Society

Chairman—George Estill, Maintenance Regulation Manager, United Air Lines, San Francisco, Calif.

Speakers

Standardization in the ICBM Technical Manual Program—Donald R. McDowell, Manager, Technical Services Department, Guided Missile Research Division, The Ramo-Wooldridge Corporation, Los Angeles, Calif.

Symbol Standardization, Progress and Problems—Harold Westman, Editor, *Electrical Communications*, International Telephone and Telegraph Company, New York; Chairman, Graphic Standards Board, ASA; representing the Association of Technical Writers and Editors

Standardization in the Production of Publications—A. N. Spence, Director of Publications, Department of the Navy, Washington, D. C.

NEWS BRIEFS.....

• As part of a continuing program by the Electronic Industries Association[1] to bring electronic component standards into an American Standard series, eight American Standards for electronic components were recently approved by the American Standards Association. These provide specifications that are of primary importance to manufacturers and users of radio, television, and electronic equipment.

Seven of the standards were developed by the Electronic Industries Association, and were reviewed by Sectional Committee C83 to determine whether they were nationally acceptable and in the best interest of all groups concerned. These provide performance and test requirements, and tolerances, for wave guides, capacitors, cable connectors, rheostats, and coaxial cables, as well as dimensions for panels used to mount electronic equipment. They are:

American Standard C83.9-1956. "Nomenclature and Dimensions for Panel Mounting Racks, Panels, and Associated Equipment" lists standard dimensions for panels and racks, with height formula, panel thicknesses, mounting screw slot locations, clearances, and similar items.

American Standard C83.10-1956. "Rectangular Waveguides" contains a table of dimensions, tolerances and frequency range for rigid rectangular waveguides, and specifies material and workmanship, type designations, and dielectric and rigidity symbols.

American Standard C83.11-1956. "Metal Encased Fixed Paper Dielectric Capacitors for d-c Application" gives tables and curves for voltage rating, capacitance values, insulation resistance, and other characteristics. It also includes methods and order of testing, dimensions of capacitors and mountings, and code designations.

American Standard C83.12-1956. "Cable Connectors for Audio Facilities for Radio Broadcasting" describes mechanical, electrical, and strength requirements, and mechanical dimensions.

American Standard C83.13-1956. "Wire-Wound Power-Type Rheostats" provides tables of type designations and resistance values. Also included are details on materials and construction, test specifications, applications, etc.

American Standard C83.14-1956. "Rigid Coaxial Transmission Lines —50 Ohms" lists definitions of terms, methods of determining impedance, transducer loss, standard wave ratio, cut-off frequency, voltage ratings, etc. A table of classifications gives dimensions, tolerances, iterative impedance and cut-off frequencies.

American Standard C83.15-1956. "Electrolytic Capacitors" provides application notes and definitions, ratings and tolerance data, standard test conditions and requirements, dimensions, and mounting design.

The Institute of Radio Engineers developed the eighth standard, on pulse quantities, and this was reviewed by ASA Sectional Committee C16 before approval as American Standard.

This American Standard, C16.28-

[1]Formerly the Radio-Electronics-Television Manufacturers Association

GAILLARD SEMINAR on INDUSTRIAL STANDARDIZATION

San Francisco, November, 1957

A private five-day Gaillard Seminar on Industrial Standardization will be held in the St Francis Hotel, San Francisco, November 18 through 22, 1957. This is the week following the ASA's National Conference on Standards. The seminar will consist of ten sessions, one every morning and afternoon, Monday through Friday.

Held twice a year in New York since 1947, the Gaillard Seminars are intended primarily to assist company managements in organizing their standardization work and training staff men in writing specifications. However, these subjects have proved to be of interest also to organizations other than companies, as shown by the attendance of the seminars which so far has reached a total of 358 men from 200 organizations. Among these conferees were delegates of 171 companies, 44 of which have been represented at two or more sessions: one large company sent a total of 16 men to nine seminars. The balance of the conferees were representatives of trade associations; engineering societies; the American Standards Association and four foreign national standards bodies; the Army, Navy, and Air Force; the National Bureau of Standards; the Mellon Institute; the Armour Research Foundation; the Massachusetts Institute of Technology; the Universities of California and Illinois; and the Hydro-Electric Power Commission of Ontario.

Dr Gaillard, formerly a member of the ASA staff and a lecturer at Columbia University, is now a management counsel specializing in advice on standardization problems.

For details and registration, write to Dr John Gaillard, Box 273, Route 1, Briarcliff Manor, N. Y.

1956, "Methods of Measurement of Pulse Quantities" provides definitions, descriptions of pulses and their measurement, and pictorial examples.

American Standards C83.9-1956, C83.10-1956, C83.12-1956, and C83.14-1956 are available at 25 cents each. The others are priced as follows:

C83.11-1956.....65 cents
C83.13-1956.....45 cents
C83.15-1956.....40 cents
C16.28-1956.....60 cents

• An important step has been taken in standardization in the field of crystal units. The United States group in charge of formulating the USA viewpoint on international questions in this field has approved the first document to be completed by the International Electrotechnical Commission's committee SC 40-3 on quartz crystals. This document, finished after only two years of work, is the first part of International Recommendations on quartz crystal units for ocillators. It relates principally to quartz crystal unit outlines and dimensions for them.

These Proposed International Recommendations are in complete agreement with the standards already agreed to in the USA—in industry by the Electronic Industries Association (formerly the Radio-Electronic-Television Manufacturers Association), in the Department of Defense by ASESA, (the Armed Services Electro-Standards Agency), and by the NATO organization.

"This is a major step forward in standardization in the field of quartz crystal units, since the all-important requirement of interchangeability has been met so completely by all organizations concerned," says R. A. Sykes, Bell Telephone Laboratories, Whippany, N. J., member of IEC/SC 40-3.

• New member of the International Organization for Standardization is the Department of Standards of Burma. Mr Htain Win is head of the Department which operates under the Union of Burma Applied Research Institute. Headquarters are in Rangoon.

• The International Organization for Standardization announces organization of two new technical committees: ISO/TC 87, Cork, with Portugal holding the Secretariat; and ISO/TC 88, Pictorial marking of handling instructions for merchandise, with India holding the Secretariat.

International Meetings Scheduled

Both the International Electrotechnical Commission and the International Organization for Standardization have scheduled meetings of technical committees during the latter part of this year. A subcommittee of the ISO Technical Committee on pipes and fittings met in Vienna, September 17-20, to discuss pipes and fittings of plastic materials for the transport of fluids. Technical Committee 81 on common names for pest control chemicals met September 18-20, and the subcommittee on coal preparation of Technical Committee 27 on solid mineral fuels met September 23-25. Technical Committees 45 on Rubber and 74 on Hydraulic Binders will both meet September 30, the one in Zurich, Switzerland, the other in Brussels.

The schedule of meetings during October, November, and December is as follows:

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

Title	*ISO No.*	*Place*	*Date*
Limits and Fits	TC 3	Berlin	October 3
Stretchers and Stretcher Carriers	TC 75	London	8-10
Pipes and Fittings/ Fittings (other than cast iron)	TC 5/SC 5	Neuchâtel	8-11
Bolts, nuts and accessories	TC 2	Vienna	15-17
Statistical treatment of series of observations	TC 69	The Hague	15-18
Welding/Graphical welding symbols	TC 44/SC 7	Paris	21-26
Sieves/Testing sieves	TC 24/SC 1	Frankfurt on Main	24-26
Sieves/Test sieving and test sieving machinery	TC 24/SC 2	Frankfurt on Main	28-30 November
Automobiles (Electrical equipment, Mechanical and Braking sections)	TC 22	Frankfurt on Main	11-16
Quantities, units, symbols, conversion factors and conversion tables	TC 12	Copenhagen	12-16
Resinous Lumber (sizing, defects)	TC 55	Moscow	20-22
Manganese ores	TC 65	Moscow	20-22
Safety colors/Safety colors, symbols and signs	TC 80/SC 2	London	21-22 December
Welding	TC 44	Paris	2-7
Syringes for medical use and needles for injections	TC 84	Paris	16-19

The following technical committees of the International Electrotechnical Commission are meeting in Zurich, Switzerland, October 1-12:

Hydraulic turbines, TC 4
Electronic tubes and valves, TC 39
Sockets and accessories for electronic tubes and valves, SC 39/40
Components for electronic equipment, TC 40
Capacitors and resistors, SC 40-1
Radio Frequency Transmission lines and their accessories, SC 40-2
Piezo-electric crystals, SC 40-3
Connectors and switches, SC 40-4
Basic testing procedure, SC 40-5

AMERICAN STANDARDS UNDER WAY

Status as of August 26, 1957

Legend — *Standards Council* — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks. *Board of Review* — Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks. *Standards Board* — Approves standards to send to Standards Council or Board of Review for final action; approval by standards boards usually takes 4 weeks.

Note — Send check when ordering standards listed as published to avoid service charge for handling.

BUILDING AND CONSTRUCTION

American Standards Published

Distillation of Tars and Tar Products, Method of Test for, ASTM D 20-56; AASHO T 52; ASA A37.9-1957 $0.30

Clay Lumps in Natural Aggregates, Method of Test for, ASTM C 142-55T; AASHO T 112-55; ASA A37.28-1957 $0.30

Terms Relating to Materials for Roads and Pavements, Definitions of, ASTM D 8-55; ASA A37.33-1957 $0.30

Testing Emulsified Asphalts, Methods of, ASTM D 244-55; AASHO T59; ASA A37.45-1957 $0.30

Distillation of Cut-Back Asphaltic Products, Method of Test for, ASTM D 402-55; AASHO T 78; ASA A37.45-1957 $0.30

Emulsified Asphalt, Specification for, ASTM D 977-53; ASA A37.55-1957 $0.30

Asphalt-Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-Up Roofs, Specifications for, ASTM D 226-56; ASA A109.2-1956 $0.30

Character of felt and saturant, and physical properties of 15-pound and 30-pound, 36-inch or 32-inch wide asphalt-saturated roofing felt for use in the membrane system of waterproofing and in the construction of built-up roofs.

Coal-Tar Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-Up Roofs, Specifications for, ASTM D 227-56; ASA A109.3-1956 $0.30

Character of felt and saturant, and physical properties of 36-inch or 32-inch wide coal-tar saturated roofing felt for use in the membrane system of waterproofing and in the construction of built-up roofs.

Asphalt-Saturated Asbestos Felts for Use in Waterproofing and in Constructing Built-Up Roofs, Specifications for, ASTM D 250-56, ASA A109.4-1956 $0.30

Character of felt and saturant, and physical properties of 15-pound and 30-pound, 36-inch or 32-inch wide asphalt-saturated asbestos felt for use in the membrane system of waterproofing and in the construction of built-up roofs.

Sponsor: American Society for Testing Materials

In Board of Review

Welded Steel Wire Fabric for Concrete Reinforcement, Specifications for, ASTM A 185-56T; ASA G45.1-(Revision of ASTM A 185-37; ASA G45.1-1942)

Sponsor: American Society for Testing Materials

In Standards Board

Building Exits Code, A9.1-(Revision of A9.1-1953)

Sponsor: National Fire Protection Association

CHEMICAL INDUSTRY

American Standards Approved

Common Name for 3-(p-chlorophenyl)-1, 1-dimethyl urea (monuron), K62-2-1957

Common Name for 3-(3, 4-dichlorophenyl)-1, 1-dimethyl urea (diuron), K62.3-1957

Common Name for 2-(2, 4, 5-trichlorophenoxy) ethyl 2, 2-dichloropropionate (erbon), K62.6-1957

Common Name for 1-*n*-butyl-3-(3, 4-dichlorophenyl-1-methylurea (neburon), K62.8-1957

Common Name for 2, 2-dichloropropionic acid (dalapon), K62.9-1957

Common Name for 2-(2, 4, 5-trichlorophenoxy) propionic acid (silvex), K62.10-1957

Common Name for p-chlorophenyl p-chlorobenzenesulfonate (ovex), K62.11-1957

Sponsor: U.S. Department of Agriculture

DRAWINGS, SYMBOLS, AND ABBREVIATIONS

In Board of Review

Letter Symbols for Heat and Thermodynamics, Y10.4-(Revision of Z10.4-1943)

Sponsor: American Society of Mechanical Engineers

Drafting Standards Manual, Y14-Section 1, Size and Format, Section 2, Line Conventions, Sectioning and Lettering, Section 4, Pictorial Drawing, Section 5, Dimensioning and Notes. (Supersedes specified portions of American Standard Drawings and Drafting Room Practice, Z14.1-1946)

Sponsors: American Society of Mechanical Engineers; American Society of Engineering Education

Graphical Symbols for Use on Railroad Maps and Profiles, Y32-(Revision of Z32.2.5-1950)

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

ELECTRIC AND ELECTRONIC

American Standard Published

Grounding and Bonding Equipment, Safety Standards for, UL 467; ASA C33.8-1957 $0.50

Sponsor: Underwriters' Laboratories

American Standards Approved

Weather-Resistant Wire and Cable, Polyethylene Type, Specifications for, C8.35-1957

Sponsor: Electrical Standards Board

Spotlight and Floodlight Service Incandescent Lamps for 115, 120, and 125 Volts, C78.105-1957 (Revision of C78.105-1949)

Method for the Designation of Mercury Lamps, C78.380-1957

72-Inch T-8 Instant-Start Single-Pin Hot-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.805-1957 (Revision of C78.805-1951)

96-Inch T-8 Instant-Start Single-Pin Hot-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.807-1957 (Revision of C78.807-1951)

25-Millimeter 93-Inch Cold-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.1104-1957 (Revision of C78.1104-1951)

25-Millimeter 69-Inch Cold-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.1106-1957

25-Millimeter 45-Inch Cold-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.1107-1957

Sponsor: Electrical Standards Board

In Board of Review

Wet-Process Porcelain Insulators (Apparatus-Cap and Pin Type), EEI TDJ-58; NEMA 146-1956; ASA C29.8-

Wet-Process Porcelain Insulators (Apparatus-Post Type), EEI TDJ-59; NEMA 147-1956; ASA C29.9-

Sponsor: Electrical Standards Board

Distribution, Power, and Regulating Transformers, and Reactors Other Than Current-Limiting Reactors, Requirements, Terminology, and Test Code for, C57.12d-(Partial revision and supplement to C57.12-1956)

Sponsor: Electrical Standards Board

In Standards Board

Rotating Electric Machinery Forming a Part of the Power Equipment on Electrically Propelled Railway Cars, Railway Locomotives, and Coaches (Trolley and Prime Mover), C35.1-Revision of C35.1-1943)

Sponsor: American Institute of Electrical Engineers

Schedules of Preferred Ratings for Power Circuit Breakers, C37.6-(Revision of C37.6-1955)

Power Circuit Breaker Control, C37.11-

Sponsor: Electrical Standards Board

Electrical Terms, Definitions of, Group 95, Miscellaneous, C42.95-(Partial revision of C42-1941)

Sponsor: American Institute of Electrical Engineers

Standard Submitted

Flexible Cord and Fixture Wire, Safety Standard for, C33.1-(Revision of C33.1-1954)

Sponsor: Underwriters' Laboratories

GAS-BURNING APPLIANCES

American Standards Approved

Addenda (Z21.1.1a-1957) to American Standard Approval Requirements for Domestic Gas Ranges, Volume I, Free Standing Units, Z21.1.1-1956

Addenda (Z21.1.2a-1957) to American Standard Approval Requirements for Domestic Gas Ranges, Volume II, Built-In Domestic Cooking Units, Z21.1.2-1956

Addenda (Z21.3a-1957) to American Standard Approval Requirements for Hotel and Restaurant Gas Ranges and Unit Broilers, Z21.3-1956

Addenda (Z21.5a-1957) to American Standard Approval Requirements for Domestic Gas Clothes Dryers, Z21.5-1956

Addenda (Z21.10.1a-1957) to American Standard Approval Requirements for Gas Water Heaters, Volume I, Z21.10.1-1956

Addenda (Z21.10.2a-1957) to American Standard Approval Requirements for Gas Water Heaters, Volume II, Side-Arm Type Water Heaters, Z21.10.2-1956

Addenda (Z21.11a-1957) to American Standard Approval Requirements for Gas-Fired Room Heaters, Z21.11-1956

Addenda (Z21.13.1a-1957) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume I, Steam and Hot Water Boilers, Z21.13.1-1956

Addenda (Z21.13.2a-1957) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume II, Gravity and Forced Air Central Furnaces, Z21.13.2-1956

Addenda (Z21.13.3a-1957) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume III, Gravity and Fan Type Floor Furnaces, Z21.13.3-1956

Addenda (Z21.13.4b-1957) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume IV, Gravity and Fan Type Vented Recessed Heaters, Z21.13.4-1955 and Addenda Z21.13.4a-1956

Gas Unit Heaters, Approval Requirements for, Z21.16-1957 (Revision of Z21.16-1956)

Addenda (Z21.27b-1957) to American Standard Approval Requirements for Hotel and Restaurant Deep Fat Fryers, Z21.27-1955 and Addenda Z21.27a-1956

Addenda (Z21.28a-1957) to American Standard Approval Requirements for Portable Gas Baking and Roasting Ovens, Z21.28-1956

Addenda (Z21.31a-1957) to American Standard Approval Requirements for Gas Counter Appliances, Z21.31-1956

Addenda (Z21.34b-1957) to American Standard Approval Requirements for Gas-Fired Duct Furnaces, Z21.34-1955 and Addenda Z21.34a-1956

Installation of Gas Conversion Burners in Domestic Ranges, Listing Requirements for, Z21.38-1957 (Revision of Z21.38-1953 and Z21.38a-1955)

Gas Conversion Burners for Domestic Ranges, Listing Requirements for, Z21.39-1957 (Revision of Z21.39-1953 and Z21.39a-1955)
Sponsor: American Gas Association

Reaffirmation Approved

Gas Hose for Portable Gas Appliances, Listing Requirements on, Z21.2-1949, R1957

Hot Plates and Laundry Stoves, Approval Requirements for, Z21.9-1948, and Addenda Z21.9a-1949, R1957

Automatic Valves for Gas Appliances, Listing Requirements for, Z21.21-1952, R1957

Dual Oven Type Combination Gas Ranges, Approval Requirements for, Z21.37-1948, R1957
Sponsor: American Gas Association

HIGHWAY TRAFFIC

Project Initiated

Method of Recording and Measuring Motor Transportation Accident Experience, D15
Proposed Sponsors: National Safety Council; American Trucking Associations

MECHANICAL

American Standard Published

Diamond Wheel Shapes, Identification Code for, B74.1-1957 $0.75
Sponsor: Grinding Wheel Institute; Industrial Diamond Association of America, Inc

American Standards Approved

Compressed Gas Cylinder Valve Outlet and Inlet Connections, B57.1-1957 (Revision of B57.1-1953)
Sponsor: Compressed Gas Association

Five-Quart and One-Gallon Round Motor Oil Cans, Requirements for, B64.2-1957 (Revision of B64.2-1954)

In Board of Review

Abrasive Discs and Plate Mounted Wheels, Machine Mounting Specifications for, B5.35-
Sponsors: American Society of Mechanical Engineers; National Machine Tool Builders' Association; Society of Automotive Engineers; Metal Cutting Tool Institute; American Society of Tool Engineers

In Standards Board

Carbide Blanks and Cutting Tools, B5.36-(Partial revision of B5.22-1950)
Sponsors: American Society of Mechanical Engineers; National Machine Tool Builders' Association; Society of Automotive Engineers; Metal Cutting Tool Institute; American Society of Tool Engineers

American Standards Withdrawn

Physical Specimens of Surface Roughness and Lay, B46.2-1952
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

MINING

In Board of Review

Roof Bolting Materials in Coal Mines, Specifications for, M30-1-
Sponsor: American Mining Congress

American Standards Withdrawn

Fire Fighting Equipment in Metal Mines, M17-1930
Sponsors: American Mining Congress; National Fire Protection Association

Mechanical Loading Underground in Metal Mines, Recommended Practice for, M19-1928
Sponsor: American Mining Congress

NUCLEAR ENERGY

American Standard Approved

Glossary of Terms in Nuclear Science and Technology, N1.1-1957 $5.00

PETROLEUM PRODUCTS AND LUBRICANTS

American Standards Published

Saybolt Viscosity, Method of Test for, ASTM D 88-56; AASHO T 72; ASA Z11.2-1956 $0.30

Flash and Fire Points by Cleveland Open Cup, Method of Test for, ASTM D 92-56; AASHO T 48; ASA Z11.6-1956 $0.30

Distillation of Gasoline, Naphtha, Kerosine, and Similar Petroleum Products, Method of Test for, ASTM D 86-56; AASHO T 115; ASA Z11.10-1956 $0.30
Sponsor: American Society for Testing Materials

PHOTOGRAPHY

American Standards Published

Criteria for Classifying and Testing the Internal Synchronization of Front Shutters, PH3.18-1957

Medical X-ray Film Cassettes (Inch and Centimeter Sizes), Dimensions for, PH3.21-1957 (Revision of PH3.21-1955)
Sponsor: Photographic Standards Board

Chromium-Plated Surfaces for Ferrotyping, Specifications for, PH4.16-1957 (Revision of Z38.8.18-1948)

Photographic Grade Potassium Iodide, Specifications for, PH4.201-1957 (Revision of Z38.8.201-1948)

Photographic Grade Potassium Metabisulfite, Specifications for, PH4.277-1957 (Revision of Z38.8.277-1948)
Sponsor: Photographic Standards Board

In Board of Review

General-Purpose Photographic Exposure Meters (Photoelectric Type), PH2.12-(Revision of Z38.2.6-1948)
Sponsor: Photographic Standards Board

Projector Aperture for 35mm, Anamorphic, 2.35:1 Prints with Squeeze Ratio of 2:1, PH22.106-
Sponsor: Society of Motion Picture and Television Engineers

In Standards Board

Photographic Sound Record on 35mm Prints, PH22.40-(Revision of Z22.40-1950)
Sponsor: Society of Motion Picture and Television Engineers

Withdrawal Being Considered

Theater Projection Screens, Dimensions for, Z22.29-1948

Mounting Frames for Theater Projection Screens, Dimensions for, Z22.78-1950
Sponsor: Society of Motion Picture and Television Engineers

PIPE AND FITTINGS

American Standard Approved

Face-to-Face and End-to-End Dimensions of Ferrous Valves, B16.10-1957 (Revision of B16.10-1939)
Sponsors: American Society of Mechanical Engineers; Mechanical Contractors Association of America, Inc; Manufacturers Standardization Society of the Valve and Fittings Industry

SAFETY

In Standards Board

Installation and Operation of Pulverized-Fuel System, Z12.1-(Revision of Z12.1-1957 and Z12.17-1946)

Dust Explosions in Starch Factories, Prevention of, Z12.2-(Revision of Z12.2-1944)
Sponsor: National Fire Protection Association

TEXTILES

In Standards Board

Methods of Testing and Tolerances for Cotton Sewing Threads, ASTM D 204-56; ASA L14.14-(Revision of ASTM D 204-42; ASA L14.14-1949)

Method of Testing Spun and Filament Yarns Made Wholly or in Part of Man-Made Organic Base Fibers, ASTM D 1380-56T; ASA L14.90-

Method of Test for Length and Length Distribution of Cotton Fibers by the Array Method, ASTM D 1440-55; ASA L14.91-

Methods of Sampling Cotton Fibers for Testing, ASTM D 1441-54; ASA L14.92-

Method of Test for Fiber Weight per Unit Length and Maturity of Cotton Fibers (Array Method), ASTM D 1442-54; ASA L14.93-

Method of Test for Maturity of Cotton Fibers (Random Sample-Sodium Hydroxide Swelling Method), ASTM D 1443-56; ASA L14.94-

Method of Test for Cross-Sectional Characteristics of Cotton Fibers, ASTM D 1444-56; ASA L14.95-

Method of Test for Strength of Cotton Fibers (Flat Bundle Method), ASTM D 1445-53T; ASA L14.96-

Method of Test for Number of Neps in Cotton Fibers D 1446-53T; ASA L14.97-

Method of Test for Length of Cotton Fibers by Fibrograph ASTM D 1447-54T; ASA L14.98-

Method of Test for Micronaire Fineness of Cotton Fibers, ASTM D 1448-56; ASA L14.99-

Method for Determining the Specific Area and Immaturity Ratio of Cotton Fibers (Arealometer Method), ASTM D 1449-55T; ASA L14.100-

Method of Test for Maturity of Cotton Fibers (Polarized-Light Method) ASTM D 1450-55T; ASA L14.101-

Method of Test for Resistance to Yarn Slippage in Silk, Rayon and Acetate Woven Fabrics, ASTM D 434-42; ASA L14.102-

Method of Test for Yarn Distortion in Woven Fabrics, ASTM D 1336-54T; ASA L14.103-

Sponsors: American Association of Textile Chemists and Colorists; American Society for Testing Materials

WHAT'S NEW ON AMERICAN STANDARDS PROJECTS

Code for Pressure Piping, B31–

Sponsor: American Society of Mechanical Engineers

Interpretations, Submitted by the Sponsor

From time to time certain actions of Sectional Committee B31 are published for the information of those interested. While these do not constitute formal revision of the Code, they may be utilized in specifications, or otherwise, as representing the considered opinion of the Committee.

Cases No. 27 and 28 are published herewith as interim actions of Sectional Committee B31 on the Code for Pressure Piping but will not constitute a part of the Code until formal action has been taken by the American Society of Mechanical Engineers as sponsor and by the American Standards Association on approval of a revised edition.

CASE NO. 27

Inquiry: May bolting material conforming to ASTM A193, Grade B7, be used at temperatures not lower than —50F?

Reply: It is the opinion of the committee that bolting materials conforming to ASTM A193, Grade B7, liquid quenched and tempered, with ASTM A194 (American Standard G38.1-1956) Class 2H nuts, may be used under Sections 3 and 5 of American Standard B31.1-1955 on standard ASA flanges at temperatures not lower than —50F without impact test.

CASE NO. 28

Inquiry: Are steel pipe flanges, flanged fittings, and flanged valves, having raised faces and using gaskets of materials, constructions, and dimensions conforming to MSS Standard Practice SP-47, permissible as American Standard B16.5-1953 Class A rated flanged joints under Section 3 of American Standard B31.1-1955, Code for Pressure Piping?

Reply: It is the opinion of the committee that flanges having raised faces, and using gaskets of materials, constructions, and dimensions within the limits stipulated by MSS Standard Practice SP-47, are satisfactory for use as American Standard B16.5-1953 Class A rated flanged joints under Section 3 of American Standard B31.1-1955, Code for Pressure Piping.

V-Belts and V-Belt Drives, B55–

Sponsors: American Society of Mechanical Engineers; National Machine Tool Builders Association

A proposed American Standard on Dimensions for Multiple V-Belts and V-Belt Drives has been prepared, and copies are being distributed for comment. Covering multiple V-belt drives used primarily for power transmission in industrial applications, the proposed standard is based on a joint industry standard published by the Multiple V-Belt Drive and Mechanical Power Transmission Association and the Rubber Manufacturers' Association. The first represents the sheave manufacturers and the latter the belt manufacturers. The proposed standard includes groove dimensions and face width of V-belt sheaves; dimensions, size designations, and lengths of V-belts, and a method of determining pitch length and pitch length tolerances. It also gives a formula for pitch length of parallel-shaft V-belts, and the center distance between two shafts of parallel-shaft V-belt drives, as well as instructions for installation allowance and take-up allowance. Horsepower ratings of V-belts are also tabulated.

One section provides information on quarter-turn V-belt drives, including a formula for minimum center distance for this type of drive. A table shows the location of the sheave on a vertical shaft, and recommendations are made concerning arrangement of the quarter-turn drive combined with parallel-shaft drive when speed ratios are greater than 2½ to 1.

Seven figures and 19 tables give detailed data provided in the standard.

Copies of Proposed American Standard Dimensions for Multiple V-Belts and V-Belt Drives, B55.1, may be obtained without charge by writing the American Society of Mechanical Engineers, 29 West 39 Street, New York 18, N. Y.

Lamp Bases and Holders, C81—
Sponsor: Electrical Standards Board

Sectional Committee C81 is currently considering whether American Standard Dimensions for Rolled or Screw Shells of Electric Lamp Holders and for Screw Shells of Unassembled Lamp Bases, C81.1-1951, should be reaffirmed or revised. A poll of lamp holder manufacturers is being made to determine the extent of use of aluminum in medium and mogul lamp holders, with the possibility of including dimensions compatible with the use of aluminum screw shells in a revised edition of this standard, if necessary.

Motor Oil Cans, MH3—
General Conference Method

Formerly designated B64, this project has now been transferred to the recently set up Materials Handling, MH, group of ASA projects. American Standards already approved under the B64 designation will retain these numbers until they are revised.

Most recently approved and published standard in this series is American Standard Requirements for Five-Quart and One-Gallon Motor Oil Cans, B64.2-1957. The five-quart and one-gallon oil can requirements are primarily of interest to service station and trucking concerns because of their use of these sizes in complete oil changes. Passenger cars, with their five-quart capacity lubrication systems, make greatest use of one-quart cans. An American Standard on One-Quart Round Motor Oil Cans was approved and published in 1954.

Other American Standards in this series are: Requirements for Oblong Oil Cans, B64.3-1954; and Requirements for Grease Cans, B64.4-1954. Both are available from ASA at 35 cents.

Standards Outlook

by LEO B. MOORE

Mr Moore is Associate Professor of Industrial Management, Massachusetts Institute of Technology, where he teaches a full-term course in industrial standardization.

Standards and Co-ordination

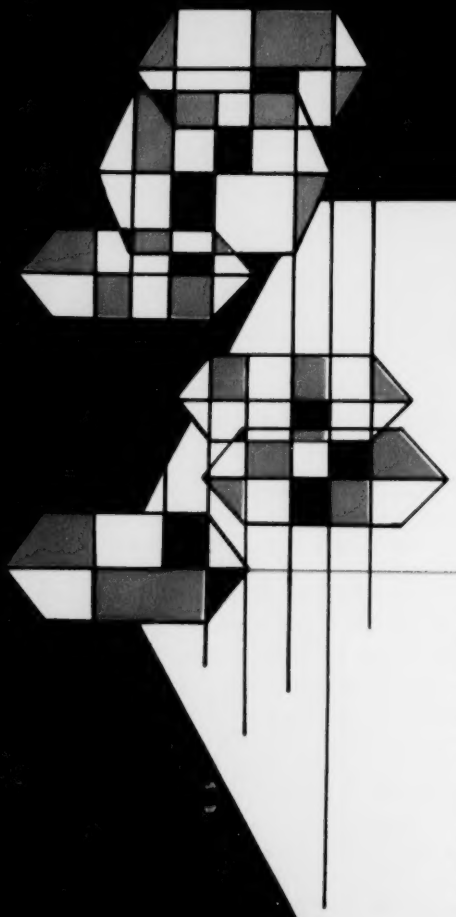
Standardization, it can be said, has merit because the understanding, the agreement, and the acceptance that goes into formulation of a standard provides for co-ordination on the part of all who employ it. The standards decision is made and published in order to effect this co-ordination, in the knowledge that lack of communication is the forerunner of duplication of effort and the instigator of unorganized activity. Co-ordination is gained by the organization because the standard is understood, not just being obeyed.

An interesting example in this area was recently brought to my attention. The company in question had received a rush order to design and manufacture a piece of equipment having a fair amount of complexity but not significantly different from the wide range of products that it normally made. In the interests of speed, the design chief gave the total job to three men who recognized the three obvious separable parts of the machine and agreed to be responsible for the design of each part. The driving, operating, and controlling mechanisms that comprised the complete unit were thus handled by three people, with whatever collaboration was needed to assure a workable unit and a manufacturable assembly. They completed the required design work in record time, and successfully as far as the technical specifications of the product were concerned. However, each section of the machine had the individual designer's thumbprints on it in many specific ways. For example, the fasteners in each section were the same but were different from those in the other sections. The fasteners in all sections were standard and were included in the standard parts book. They were simply the choice by long practice of the individual designer. It might therefore be observed that the work of the three design engineers was contrary to the spirit of standardization, yet within its principles and practices.

Among the interesting aspects of this specific example is the factor of co-ordination as viewed from the management position. Assuredly, standards provide co-ordination; but it is clear that there is an area of co-ordination that transcends the simple standard, and appears to be associated with understanding on a total outlook basis.

Is there some opportunity for standardization to be found in this example? Could standardization assume some burden here in order to assure that the virtue of co-ordination is achieved?

One possible opportunity that would be of value is the development and publication of the fundamental aims of standardization with respect to the company's operations generally. This might be considered an educational effort designed to convey to the company the transfluent nature of standardization and the inter-dependence of the needs of design, assembly, repair, and maintenance in terms of standards. With respect to co-ordination, the same understanding that is developed for a single standard is obviously needed for the entire standards program.



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